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Educational News and Editorial Comment

EDUCATION IN THE UNITED STATES DURING 1930

The United States Department of the Interior has made the following statement concerning education in the United States during 1930.

According to an estimate based on the latest available statistics collected by the United States Office of Education the enrolment in elementary schools for the year 1930 was approximately 21,370,000. The number of pupils enrolled in public high schools was 4,030,000. The total number of teachers was 848,500; the number of schoolhouses, 254,200. School expenditures totaled $2,289,000,000. The number of pupils enrolled in private and parochial elementary and secondary schools was 2,704,000.

The declining birth-rate in the United States is being felt in the schools. In an average group of two hundred Americans in 1915, five children were being born each year. In that same average group in 1928 less than four children were being born, according to statistical studies made by the Office of Education.

The problem of teacher supply and demand has become a matter of concern to school authorities. An apparent oversupply of teachers of liberal-arts subjects and of elementary-school work in some localities has led to more exacting requirements for entrance to teacher-preparing institutions and in requirements for certification. More than one-third of the teacher-preparing institutions reported the application of such special selective measures to entering students

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as the requirement of superior high-school scholarship, satisfactory intelligence scores, and high scores on achievement or other special tests. A growing number of progressive cities and states now require a minimum of three years above high school for certification of teachers.

More than 421,000 teachers, or about 45 per cent of the nation's combined administrative, instructional, and supervisory staffs of public elementary and secondary schools, took special courses last summer, according to a survey made by the National Education Association.

A qualitative improvement in the nature of the offerings of teacher-preparing institutions is evident. The enrolments in teacher-preparing institutions are not increasing in a growing number of states. Somewhat better service, therefore, is possible for trainees in respect to more highly trained instructors, better building and housing facilities, a greater variety of offerings, and better instructional equipment for libraries and laboratories.

The past year saw an increasing trend in industrial education to provide courses of a specific character to meet the needs for vocational training in definite and specific lines of work, as witness the introduction of aviation courses into the public schools of Buffalo, New York.

Another feature of the past year's development was the increasing tendency for the public schools to seek the aid of industries, through individuals and through committees, in the organization of industrial courses.

More than a million persons, young and old, were enrolled in vocational schools in 1930, including 170,000 who were learning to farm better, 250,000 learning to make better homes, and 625,000 learning to do some specific job better in trade and industry, according to the report of the Federal Board for Vocational Education. This enrolment was largely in schools which received aid under the terms of the national vocational-education act and all of it in vocational courses organized and conducted under joint federal and state vocational education.

The National Congress of Parents and Teachers instituted a demonstration in parent education which is supported by funds appropriated for a period of two years, 1930–31, by the Laura Spelman Rockefeller Fund of the Rockefeller Foundation, and directed by an expert selected to demonstrate in several states how to organize and conduct study groups of parents and how to train leaders for study groups.

Physical education and recreation as essential factors in school and community life received considerable recognition during the year. Provisions for adequate school playgrounds were made in thirty-six states, and more than sixty cities adopted five acres as a minimum standard for elementary-school playgrounds.

In the field of hygiene and physical education valuable studies were made by the Phipps Institute of Philadelphia, Pennsylvania, concerning tuberculosis in school children. The American Child Health Survey published material from

its health survey of the past three years, and the Carnegie Foundation completed its investigation of athletics in colleges.

A surprisingly large number of colleges and universities developed summer camps in connection with their courses in engineering, geology, biology, botany, zoölogy, physical education, recreation, and forestry.

Changing social conditions following the post-war period have presented varied and complicated problems in negro education. In spite of the large exodus of negroes to northern cities, serious problems still exist in the southern states. Compilations made in the Office of Education during the year indicate that percentages of enrolment in public schools in thirteen southern states are 69.3 among negroes as compared with 83.8 among whites; that percentages of the two races in public high schools are 2.6 and 11.5, respectively; and that the average annual term is eighteen days shorter in negro than in white schools.

Increasing attention was given during the year to the education of subnormal and abnormal children in the United States. A survey of this field by the Office of Education disclosed that there are 736 cities with a population of more than 10,000 which now have special classes and schools to reach those children deviating from average capacity.

If one were to ask, "What is the dominant factor in education at the present time?" the answer would undoubtedly be, "Research." It is through research that education, in this country, is making such rapid strides. "American educators," said William John Cooper, United States commissioner of education, in an address before the Department of Superintendence, National Education Association, in February, 1930, "are studying in a scientific and professional spirit the problems of our time. They are shaking off the fetters of tradition. No longer do school boards send delegates abroad to bring back ideas for our democracy. Our rapid advance in the sciences basic to education and our supremacy in mechanical lines open for us the road to world-leadership."

Plans for co-operative research in education progressed during the year, thanks to the impetus given the movement at a joint conference on the subject, called by the United States commissioner of education, in conjunction with the American Educational Research Association and the Department of Superintendence, at Atlantic City on February 27, 1930. A committee composed of prominent directors of research bureaus in city school systems was appointed at this meeting to study problems involved in co-operative research, especially the elimination of unnecessary duplication in work.

The federal government has contributed its share in advancing the cause of educational research. In June, 1930, the Department of the Interior, through its Office of Education, completed its nation-wide survey of land-grant colleges, begun in July, 1927. This study, one of the most comprehensive ever undertaken in the field of higher education, was authorized by Congress three years ago, and an appropriation of $117,000 was made to defray its cost. The report of this investigation contained more than eighteen hundred pages and was print-

ed in two volumes. All phases of the operations of the land-grant colleges and universities were evaluated in this report.

The National Survey of Secondary Education, which Congress authorized the Department of the Interior to conduct through its Office of Education, made progress during the year. For the prosecution of this investigation, Congress appropriated $225,000. The survey was begun in July, 1929, and will close in June, 1932. It will concern itself with the organization, administration, financing, and work of secondary schools and with their articulation with elementary and higher education. It is expected that upon its findings will be based much of the educational legislation of the future.

A nation-wide study of the professional education of teachers, for which Congress appropriated $200,000, was inaugurated July 1, 1930, by the Office of Education. Copies of a carefully prepared questionnaire, brief and to the point, will be sent to one million teachers in the United States.

The National Advisory Committee on Education, which was organized in May, 1929, to determine the proper relations of the federal government to education in this country, published a pamphlet entitled *Memorandum of Progress* in July, 1930. After laying down the general principle that the government has an obligation to aid public education in the states, the committee declared that it should do so in a manner that will not violate other fundamental educational, political, social, and economic considerations basic to sound public policy. Matching federal money grants, whether general or special, with state funds is a policy not to be favored, said the committee. Further, "It is unwise to centralize in the federal government, as opposed to the state and local governments, the power of determining the social purposes to be served by schools or of establishing the techniques of educational procedure."

The Advisory Committee on Education by Radio, appointed by the Secretary of the Interior, published its report on November 10, 1930. The extent of educational broadcasting in the United States and in sixty other countries was summarized. The report of the foregoing committee led the United States commissioner of education to call a conference on education by radio in Chicago on October 13, 1930, at which representative educators, commercial broadcasters, and a member of the Federal Radio Commission were present. This conference urged that Congress "enact legislation which will permanently and exclusively assign to educational institutions and government educational agencies a minimum of 15 per cent of all radio broadcasting channels which are or may become available to the United States."

During the year noticeable efforts were made to improve the means of raising school revenues. Investigations on the subject were instituted by eight authoritative committees of state legislatures.

Research studies which look particularly toward the equalization of educational opportunities for children in rural communities were inaugurated by the United States Office of Education. Among such projects was one which endeavored to obtain a representative picture of the extent to which various levels and

types of education are available to rural children. A number of educators representing state departments of education and professors in higher institutions in representative states co-operated in the collection of the information. Individual records of approximately sixty thousand rural children, showing the distances their homes are from schools provided, attendance, age, school progress, and other data, together with an evaluation of the influence of distance upon their education, form the basis of the study.

A noteworthy project in education was the survey of the public-school system of Buffalo, inaugurated in March, 1930, and completed in December, 1930, by the United States Office of Education at the request of the Buffalo Municipal Research Bureau, Incorporated, and the Board of Education of Buffalo.

During the past year the Board of Education of the Methodist Episcopal Church inaugurated a survey of the universities and colleges under its control, as a part of a general survey of all Methodist educational institutions.

State surveys of higher education in Arkansas and Oregon were completed during the year by the United States Office of Education. The Society for the Promotion of Engineering Education made a re-survey of engineering education as a means of ascertaining the changes that may have resulted from the major survey undertaken by the society four years ago.

THE NATIONAL SURVEY OF TEACHER TRAINING

The Department of the Interior has prepared the following statement with respect to the National Survey of the Education of Teachers, which is being made under the supervision of the Office of Education.

The United States government is asking ten minutes of the time of every teacher in the public-school systems of America.

Each one of the 848,000 teachers of America is requested to spend ten minutes answering one of the most widely distributed questionnaires ever issued to teachers.

The questionnaires are being circulated to secure data for the National Survey of the Education of Teachers authorized by Congress. Leading national educational organizations—the Council of State Superintendents and Commissioners of Education, the American Association of Teachers Colleges, and the Association of Deans of Education—asked for the survey in order to secure for the first time usable information which can be applied to the nation-wide problems of oversupply of teachers. One hundred and twenty-five teacher-training institutions out of 130 reporting to the Office of Education indicate an oversupply of teachers in one or more branches of the profession. In New York alone five thousand teachers are reported unemployed.

The direction of the National Survey of the Education of Teachers has been intrusted to the Office of Education, which has been given $200,000 to make the study. Experts under the supervision of Dr. E. S. Evenden, associate director

of the survey and professor of education at Teachers College, Columbia University, are being brought to Washington by the federal bureau to perform the work, which will require three years.

The Office of Education gave to the public printer an order for a million copies of the questionnaire. Educational authorities worked over the questionnaire for four months before the copy was released to the printer. They reduced it to the minimum number of questions and clarified it for answering. Proof copies were used with trial groups of teachers as a final check before printed copies went out in January.

The questionnaire, which has been distributed through state superintendents of education and city superintendents, asks each teacher for the following information: description of work, number of teachers in same building, class in school, other school responsibilities, training, sex, marital status, type of community, experience, employment, salary, degrees, semester credits earned, if new in school, where from, and teaching load.

In addition to definite data on teacher supply and demand, the National Survey of the Education of Teachers is expected to reveal how well qualified American teachers are for their work, according to the variety of work and variety of community and for the various states.

"The Office of Education requests the co-operation of every teacher of the public-school systems of the United States in answering the questionnaire," says William John Cooper, commissioner of education of the United States. "Every teacher making a prompt reply to the questionnaire can feel that he or she is contributing to the improvement of education's service to the United States and to the improvement of working conditions in the teaching profession."

The teacher-education survey is one of three great national surveys which the Office of Education has been asked to make in recent years. The Survey of Land-grant Colleges and Universities has just been completed. The National Survey of Secondary Education, which is a study of the nation's twenty thousand high schools, is now under way in the office.

"It has been claimed," says Dr. E. S. Evenden, associate director, "that the rural schools and the schools in the smaller towns and cities are forced to accept the inexperienced and the untrained teachers and that as soon as the more capable of these gain the necessary experience they are taken into city school systems. The National Survey of the Education of Teachers should show to what extent this is true, and it should also throw light upon some of the causes. It will show the relative salaries paid in the rural schools and the small villages. It will also show the number of grades they teach in the smaller schools and in the schools of the smaller places.

"Much constructive educational legislation has been passed in recent years by all the states. Some of the laws passed, while well intentioned by those who introduced them and by those who passed them, have not been constructive because they were not based upon accurate data.

"One of the results hoped for from this supply-and-demand questionnaire

will be its value to state educational leaders as a guide to the school legislation which by the very nature of the present situation will, during the next five years, be larger in amount and more far-reaching in its results than during any similar period in our history.

"School administrators and state legislators, during this critical period of readjustment and increasing standards, will be vitally concerned with three large phases of the problem. In the first place, what measures can be adopted to maintain and increase the scope and efficiency of the public schools at this time? In the second place, what can be done to care for the present unemployed teachers in order to prevent individual suffering and a loss of professional morale? In the third place, what measures can now be taken to prevent the recurrence of these conditions?"

RURAL EDUCATION IN MEXICO

The *News Bulletin of the Institute of International Education* published the following statement with regard to the rural schools of Mexico. The statement was prepared by Dr. Moisés Sáenz, formerly subsecretary of education in Mexico.

Even the most superficial acquaintance with present-day Mexico is sufficient to leave the observer convinced that one of the country's most important obligations to itself as a nation, perhaps the most sacred of its bounden duties if it is to fulfil truly its rightful rôle among the nations of the modern world, is the social rehabilitation of the mass of its people.

This, in a word, means that Mexico must educate its long disinherited basic population, the rural 80 per cent of the people. In no other way can it weld for itself a truly national conscience and secure a unified national performance. And in using the term "education," the writer means not merely instruction in reading, writing, and arithmetic but rather the opportunity of actually teaching the people how to live and how to live an adequate rural life.

The task presents very deep-rooted obstacles, the greatest of them perhaps being the lack of a common language medium. One-third of the population of Mexico is pure Indian, and the catalogue of the native Mexican tribes lists as many as forty-nine ethnic groups, among which authorities estimate that some three millions of individuals are unable to speak a word of the Spanish language. Such condition constitutes a formidable barrier to any effort toward cultural integration—to education.

There are other barriers, perhaps not so formidable but certainly of influence, resultant from the great geographic diversity of the country and the lack of adequate communication systems. The previous inadequacy of these has constituted one of the grave problems of post-revolutionary Mexico—happily one which is being confronted successfully and rapidly. And as progress is made in the betterment of these conditions, so are the problems of rural education, of cultural integration rendered less general and less difficult.

From the closing years of the presidential term of former General Alvaro Obregon when the first rural schools were established, there has been constant progress. The process is not rapid, but a firm foundation has been laid.

What a Mexican rural school really is, the part it plays in the community, is perhaps best told by a mere listing of the attributes by which each separate little school is judged. The Federal Department of Education requires and encourages the rural schools in the following activities, and with the following results in the past year: Of 4,032 rural and primary schools (data for the 2,488 circuit rural schools are not included here), 3,890 hold regularly social reunions for the entire community; 3,890 hold Sunday morning programs; 3,895 have conducted health and hygiene campaigns; the teachers of 3,425 schools have vaccinated their entire communities; 3,172 schools have held local fairs or expositions; 487 communities have constructed stretches of highway on the initiative of the rural school, a network of 1,701 kilometers of road being thus laid; 327 tiny schools have introduced good drinking water into their communities; 354 have established post-offices; 141 have installed telephone or telegraph connections; 80 have installed radios; 1,526 have founded school and community libraries; 854 have installed shower baths; 3,943 have organized committees on education; 1,853 have formed child-welfare committees; 1,262 have cultural societies for adults; 2,641 have founded classes in small industries; 1,589 have shops for the minor trades; 2,977 have co-operatives for the pupils; 1,629 schools have co-operative societies for adults; 823 have inter-neighborhood co-operatives; 3,321 have cultivation fields for the major crops; 2,874 have vegetable gardens; 2,459 keep chickens; 1,551 have pigeons; 1,006 keep rabbits; 786 have bees; 589 have pigs; 522 have other farm animals in addition; 379 have constructed children's playgrounds; 3,192 have leveled off athletic fields; 750 have boy-scout clubs; 3,735 have a national flag; 1,847 have constructed open-air theaters; 837 have regional museums; 3,042 communities own their own school building; 943 have built houses specially for the teacher; and 101 communities have built special community houses in addition to the school.

The federal government of Mexico does not pay for school buildings. It pays the teachers' salaries, but each community provides its own school, from the land on which it stands to the material and the actual labor which goes into the building. The pupils themselves, assisted on Sundays by the adult men, build the building, following the approved plan and instructions furnished by the Federal Department of Education. Invariably the schoolhouse is the most important structure in the village next to the ancient church built under instructions of the remote but one-time predecessors of these modern missionary teachers; in many of the more isolated districts the newly built schoolhouse is more imposing than the church.

If one figures out the percentage to which one or the other activity of the above enumerated list pertains to each rural school, one has a fairly good picture of the rôle it plays in the rural communities throughout Mexico in addition to its traditional one—that of teaching reading, writing, and arithmetic.

Mexico has today 6,520 of such socializing institutions scattered throughout the republic. In addition, the federal government's organization for educating the rural masses consists of fifteen regional normal schools for the training of rural teachers; twelve *misiones culturales*, or groups of experts who travel about the country remaining in specified districts for four weeks at a time, forming a sort of itinerant normal school of intensive training for the teachers in service who have been gathered together; two stationary Rural Improvement Missions made up of similar groups of experts who are given time for more concentrated work within a given radius; four Indian schools, boarding centers planned for the purpose of having the Indian boys constantly under the influence of the teachers—the above, all under the Federal Department of Education. In addition, but working to the same end, are the eight State Central Agricultural Schools for the thorough training in practical agriculture of the sons of the heads of families who have received lands under the post-revolutionary agrarian laws of Mexico.

This equipment grows constantly, but roughly speaking, this is the pattern by which Mexico is facing the problem of teaching its rural masses how to lead a better personal and domestic life and a more satisfactory social life.

SPECIAL EDUCATION IN BALTIMORE

Following a survey of special education in Baltimore made in 1929 by J. E. Wallace Wallin, whose description of the admission procedures and standards adopted for the special classes appears in this issue of the *Elementary School Journal*, the Board of School Commissioners established a division of special education for the administration of classes for mentally, physically, and educationally handicapped children. In the annual report of the Board of School Commissioners for the scholastic year ended June, 1930, the accomplishments of the division for the first year are summarized as follows:

1. Better classification of pupils in the classes for the mentally handicapped. . . . . At the close of the year the classes were distributed as follows:

Type of Class	Number
Opportunity	52
Special centers	13
Mixed classes	6
Total	71

The work of reclassification has not been completed. Many opportunity classes contain a few mental deficients, while some special centers contain a few backward children; all the "mixed classes" contain both grades.

2. Examinations by the psycho-educational clinic. The number of completed examinations made during the year was as follows:

	Boys	Girls	Total
White	936	479	1,415
Colored	58	18	76
Total	994	497	1,491

This includes only the children for whom complete information was supplied. Occasionally children were recommended without examination.

3. Numerical increase in enrolment in special classes since the survey of special education in the spring of 1929 is as follows:

Type of Case	Enrolment in Special Classes in Spring of 1929	Enrolment in Special Classes in June, 1930
Mentally handicapped	1,110	1,310
Speech defective	1,102	2,050
Malnourished	347	352
Orthopedic	270	274
Deaf and deafened	31	34
Hard-of-hearing receiving lip-reading	124	170
Visual deficiencies	27	64
Behavior boys in day classes	31	21
Behavior boys in parental schools	87	103
Cardiopaths	18	20
Shut-ins receiving home instruction	32	75
Total	3,179	4,473

It will be observed that the greatest increase has occurred in the work with speech defectives (an increase of 948), the mentally handicapped (an increase of 200), visual defectives (an increase of 37), the deaf, deafened, and hard-of-hearing (an increase of 49), and shut-ins (an increase of 43). During the year a total of 124 (77 white and 47 colored) children received home instruction for varying periods of time.

In January, 1930, the pupils enrolled in the Division of Special Education numbered 4.96 per cent of all the pupils enrolled in the kindergarten and first eight grades.

4. A new type of class was organized during the year, a hearing-conservation class, in which speech development and lip-reading for very hard-of-hearing children was furthered by the use of an amplifier. In this type of class the pupils receive aid in the preparation of their assignments, and then they recite

with normal-hearing children in the regular grades. This experimental class, probably a pioneer of its kind, has fully justified itself.

The instructional work for the deaf and deafened has been much improved during the year by the location of all the classes in one school.

AUTHORITY OF SCHOOL BOARD TO EMPLOY WIFE OF ONE OF ITS MEMBERS

In a recent case[1] the Supreme Court of Michigan has held that a board of education may legally employ as a teacher the wife of one of the members of the board. The court was influenced in its opinion by a statute which reads in part:

> Each and every married woman in the state of Michigan shall be absolutely entitled to have, hold, own, retain, and enjoy any and all earnings acquired by any such married woman as the result of her personal efforts; and to sell or otherwise dispose of any and all such earnings, and to make contracts in relation thereto to the same extent that any such married woman could have or do if unmarried.

The following statement is quoted from the opinion of the court.

> Notwithstanding the provision of the school law broadly provides that a school officer shall not "be personally interested in any way whatsoever, either directly or indirectly," in the contract with the district, we think it is not applicable to the case here presented. Under Section 11,478 above quoted, Mr. Spoelman clearly has no financial interest in this contract. Any wages which may be paid Mrs. Spoelman as a teacher will be her individual property the same as though she were an entire stranger to Mr. Spoelman. The statute does not apply to one having only a remote interest which a school officer might have under many and varied circumstances. For example, he might be very much interested in having his neighbor's son or daughter employed as a teacher but it would not seriously be contended that this disqualified the officer from contracting in behalf of his district. The same would be true if the teacher was an adult son or daughter of the school officer. The question here involved in principle at least is passed upon in *Lewick* v. *Glazier*, 116 Mich. 493, 74 N.W. 717. A case involving the exact question and identical facts under statutory provisions more stringent than those of this state was brought before the Ohio courts; and it was there held that the wife of an officer of the school district could be legally employed as a teacher in such district. *Board of Education* v. *Boal*, 104 Ohio 482, 135 N.E. 540.
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> We do not overlook the fact that the purpose of the provision of the school law under consideration is expressed in broad terms. The words "directly or

[1] *Thompson* v. *District Board of School District No. 1*, 233 N.W. 439.

indirectly" were obviously used in this statute to make it broad enough to prevent an officer who might be so disposed from circumventing and defeating this provision of the law. The most common violations are those incident to contracts with corporations in which the school officer is a shareholder or with partnerships in which he is a member. In such instances there is clearly an "indirect" interest. Cases of this character are reported in *Consolidated Coal Company* v. *Board of Trustees*, 164 Mich. 235, 129 N.W. 193, and *Ferle* v. *City of Lansing*, 189 Mich. 501, 155 N.W. 591, L.R.A. 1917C 1096. These decisions are not applicable to the case at bar. We are of the opinion that the instant contract should not be held to be in violation of the quoted provision of the school law, nor do we know of any good reason why it should be held to be contrary to public policy. This contract is not of such a nature that it cannot be fulfilled without reaching beyond the parties and working, or tending to work, an injury to the community at large, hence it is not contrary to public policy.

A PROPOSED PROGRAM FOR FINANCING EDUCATION IN WEST VIRGINIA

In 1929 W. C. Cook, superintendent of schools in West Virginia, appointed the State Council on Education to study the school problems of the state. The council sent out a questionnaire to school men and women asking that they list the six major problems confronting education in West Virginia. Of those answering the questionnaire 95 per cent indicated that school finance was the problem most pressing for solution. Consequently, Superintendent Cook and the council have drafted a plan which provides for increased state aid in the maintenance of the school system. The plan, as reported in *Educational News*, the official organ of the State Department of Education of West Virginia, is as follows:

The first step in the proposed program is the creation of a state relief fund. This fund will contribute to every district in the state, whether independent or non-independent, $300 to its elementary-teachers' fund and $75 to its elementary maintenance for each elementary teacher, supervisor, or principal in the state.

It will contribute to every district in the state, whether independent or non-independent, $450 to its high-school-teachers' fund and $125 to its high-school maintenance fund for each high-school teacher, supervisor, or principal in the state.

The average levy for elementary-teachers' salaries and maintenance last year was 77 cents on the $100. Under the proposed plan, the average levy will be 48 cents or an average reduction of 29 cents.

The average levy for high-school purposes last year was 50 cents. Under the proposed plan, it will be reduced to 38 cents, an average reduction of 12 cents.

Including the relief which the building fund will give, the average reduction in the levy for all school purposes will be 44 cents on every $100 worth of assessed valuation of property in the state.

This relief would save thousands upon thousands of farms and other properties from being sold for taxes.

If this revenue is obtained from aspects of our commercial life not now contributing, the present standard of teachers and maintenance can be maintained. Otherwise we are in danger of drastic retrenchments.

A cut in salaries or in the length of school term means a demoralization of our teaching force. Our better teachers will move to states with better systems of school finance.

The second step in the proposed program is the creation of an equalization fund of $1,500,000. This fund will enable every district in the state to provide the minimum elementary-teachers' salaries and maintenance at a levy of 50 cents or less.

Without some form of state aid, many districts would be forced to levy more than $4.00 on each $100 worth of taxable property.

The new plan equalizes the levies for the minimum elementary-school program so that the levies in the various districts are within a few cents of the average for the state.

In view of the fact that the state demands that every child be given an equal opportunity for an efficient education, we believe that justice demands that the burden of this support be equalized.

The third step in the proposed program is the creation of a fund for the purpose of assisting poor districts to consolidate with others and construct better school buildings.

In many districts of the state the school buildings are a disgrace to any civilized community. A study of the following facts will explain why this is true.

The state does not assist local districts in their building programs. Buildings must be constructed by levies raised on property in local districts. The maximum levy, without the consent of the state superintendent and state tax commissioner, is 20 cents on the $100. In most of the poorer districts in recent years, the tax commissioner has refused requests for the additional twenty-cent levy.

The assessed valuation of property in each of 58 districts in West Virginia is less than $1,000,000. The assessed valuation in each of 119 more is less than $2,000,000. The assessed valuation in each of 57 others is less than $3,000,000. In other words, 234 out of 393 districts in the state, have an assessed valuation of less than $3,000,000. The average valuation of these districts is approximately $1,500,000.

A twenty-cent levy on $1,500,000 will produce $3,000. The richest of these districts will raise only $6,000. Yet this sum must build and equip all the elementary, junior and senior high schools in the respective districts.

No wonder there are 134 districts out of 393, or more than one-third, that do not have the semblance of a high-school building in them.

No better investment can be made in the state or by the state than to spend $500,000 in supplementing the funds of local districts in constructing carefully planned consolidated school buildings. Enormous wastes can in this way be saved which otherwise are imperative.

The fourth step in this program is the creation of a fund of $225,000 for the purpose of providing school management and supervision in districts that are now without it.

Almost three-fourths of the districts of the state are without any supervision, except that of a county superintendent of schools. This is a crime both to the children and to the taxpayers of these communities. A child nowadays has a right to know that his physical, intellectual, and spiritual destiny is guided by someone other than a young, inexperienced, second- or third-grade teacher.

The state should make sure that its children are receiving a real opportunity for complete development. This is the product of education. Industry resorts to foremen and supervisors to insure its efficiency. Should we assume that our educational system is any less in earnest in regard to its results?

We believe that the state should assist local school officers to employ thoroughly capable and well-trained men and women to safeguard and guide the educational destiny of every child in the state.

These supervisors are to be employed by the local authorities, the state assisting 50 per cent, or more if necessary, in order that all districts may be provided with efficient supervision.

The plan, it will be noted, carries no specific recommendation with respect to the mode of raising the funds to be supplied by the state. The legislature is requested to raise the necessary funds from hitherto untapped and indirect sources in such manner as it may deem expedient.

THE SCIENCE PROGRAM OF THE CLEVELAND SCHOOLS

The following statement was published in *School Topics*, the official magazine of the public schools of Cleveland.

A six-year course in natural sciences which establishes a sequence from grade to grade was inaugurated in Cleveland public schools this fall. General science is given in the seventh, eighth, and ninth grades. Biology, chemistry, and physics are presented in the senior high schools.

The course recognizes the three main ends of science: cultural, application to everyday living, and preliminary technical training. In the past Cleveland schools have tended toward the application to everyday living as the only end in the teaching of science. The new course will stress the other factors.

Biology receives more emphasis in the new course than formerly, now opening the way to hobby interests for pupils through emphasis of the study of rare flowers, game, birds, animals, and fish.

Health also takes a prominent place, appearing from Grade VII B through Grade VIII A, when mental health is included in the curriculum. Two thousand school children were examined for physical defects in the search for information to include in the health study.

Comprehensive tests are to be given after a student has completed three years of the science course. If ability warrants, he is to be urged to continue the work. Every pupil, however, is to be encouraged to take some additional courses in science. At the end of six years the student again is to be tested for his knowledge. He knows when he starts the work in Grade VII B that these tests are to come, the theory being that he organizes his knowledge in preparation for them.

The Cleveland course takes cognizance of the changing tendencies in physics and chemistry, the first time they have been included in a high-school course of study.

SUPPLEMENTARY MATERIALS FOR THE STUDY OF GEOGRAPHY AND ELEMENTARY SCIENCE

The various departments of the United States government carry on researches and publish materials along the lines of their special interests and responsibilities. These publications are well written, authentic, and contain a wealth of information which can be obtained in no other place. With the view of making these materials available to teachers and pupils, the Office of Education has published a circular entitled "Government Publications of Use to Teachers of Geography and Elementary Science" (Circular No. 28, 1930). The circular lists publications suitable for school use and indicates how they may be secured. By securing these publications, teachers may supply their pupils with reference materials of real social worth.

A GOVERNMENT BULLETIN FOR TEACHERS OF ADULT ILLITERATES

The following statement was published in the *New York Sun*.

Approved by President Hoover and Secretary Ray Lyman Wilbur, a new government manual for teachers of adult illiterates is now going forth to educators all over the country. It is a book which has been prepared after months of study and investigation in which the methods in use in various sections of the nation in campaigning against illiteracy have been carefully weighed and examined. It is issued by the National Advisory Committee on Illiteracy.

While the book discusses such subjects as the type of teachers required and the social problems to be met and solved, the meat of it is a brief course of study

in the three R's outlined "for the purpose of quickly turning illiterate into literate citizens."

The book adheres closely to the plan of attacking illiteracy evolved in the moonlight schools of Kentucky. The same plan of writing for adult beginners, the identical first lessons in reading, and the same vigorous campaign for searching out illiterates in their homes and persuading them to come to school are found in this government manual. . . . .

The manual was prepared by Dr. William S. Gray, of the University of Chicago, who made the study for the National Advisory Committee on Illiteracy, of which Secretary of the Interior Wilbur is chairman. The study was under the direction of Dr. Charles R. Mann, chairman of the subcommittee on techniques and his associate members and was financed by the Julius Rosenwald Fund.

ANNOUNCEMENT OF A NEW MAGAZINE

Lewis H. Carris, managing director of the National Society for the Prevention of Blindness, announces the publication of a quarterly magazine entitled the *Sight-Saving Review*. The new journal will be devoted to all aspects of prevention of blindness and conservation of vision. According to the announcement, the new journal "is designed to meet the needs of state and local prevention-of-blindness workers, educators, illuminating engineers, school physicians and nurses, safety engineers, public-health administrators, industrial physicians and nurses, sight-saving-class teachers and supervisors, ophthalmologists, and anyone interested in the sociologic phases of saving sight." The journal will contain original articles, abstracts from current periodicals throughout the world, book reviews, and reports of the society's activities. Mr. Carris is editor, and Miss Isobel Janowich is managing editor. The place of publication is 370 Seventh Avenue, New York City.

THE EFFECT OF SPECIFIC DRILL ON READING ABILITY

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INTRODUCTION

The aim of this study is to show the effect of definite, purposeful drill on general reading ability, as indicated by standardized, diagnostic, silent-reading tests. Several studies of the effect of specific drill on reading abilities have been made by such men as William S. Gray, Grover H. Alderman, and John A. O'Brien. The studies by these men had different aims, were made under different conditions, used different training exercises, and stressed different reading skills from those of the investigation reported in this article. The problem of the writers differed from that of previous investigators in that the purpose was to give drill only to those pupils whose reading scores in the Gates Silent Reading Tests indicated a definite need for practice.

The aim of this experiment was, then, to answer the following question: What is the effect in an ordinary public school of a procedure in which a series of drills definitely planned to emphasize specific reading skills is given to those pupils who already realize their needs as compared with a procedure in which there is no attempt to overcome individual difficulties indicated by the findings of standardized, diagnostic tests?

PROCEDURE

In the autumn of 1929 the four types of the Gates Silent Reading Tests, Form 1, were given to two sixth-grade classes in two public schools in Grand Rapids, Michigan. In this study only a half-grade, the low sixth, was used. The groups in the two schools will be called the experimental group and the control group. Each child

in the experimental group was paired with a child in the control group on the basis of the composite scores, or averages of the scores earned on the four types of the tests mentioned. Pairing on this basis would result in the selection of pairs of pupils who showed some variation in the reading skills measured by the tests of different types; that is, while the composite scores for a pair would be nearly the same, their individual scores on Type A, Type B, etc., might

TABLE I

COMPOSITE GRADE SCORES ON SILENT-READING TESTS AND INTELLIGENCE QUOTIENTS OF PAIRS OF PUPILS IN EXPERIMENTAL AND CONTROL GROUPS

PAIR	GRADE SCORE IN SILENT READING		INTELLIGENCE QUOTIENT	
	Experimental Group	Control Group	Experimental Group	Control Group
1	7.2	7.0	130	96
2	6.8	6.9	117	96
3	6.4	6.5	93	107
4	6.3	6.2	90	107
5	6.3	5.9	98	115
6	6.2	5.8	84	95
7	6.0	5.8	109	111
8	5.9	5.8	99	96
9	5.6	5.7	107	104
10	5.4	5.7	88	76
11	5.3	5.4	80	99
12	4.9	4.9	95	86
13	4.7	4.7	85	95
Average	5.9	5.9	98.1	98.7
Standard deviation	0.7	0.7	13.8	10.3

vary considerably. The intelligence quotients were necessarily disregarded in the selection of pairs, but they have been taken into consideration in the interpretation of the results.

Table I shows the method of pairing the pupils. The thirteen pupils in the experimental group were selected from eighteen children in the low-sixth grade in the experimental school. The standard for selection was arbitrarily fixed at the grade level which the pupils should reach by the end of the semester; that is, all children whose grade score in any of the four types of tests fell below the standard grade score of 6.5 were included in the group selected for drill. Some pupils fell below the standard in only one or two types

of reading, hence they received drill in only those specific types. By this arrangement a child might have a composite score above 6.5 although he was in need of drill because of a deficiency in one or more types of reading. There were only two children in the experimental group and three in the control group whose composite grade scores were 6.5 or more.

After the pupils had been selected and paired, the experimental group was given practice by means of exercises corresponding to the four types suggested in the Gates test. This practice was given in a regular period of thirty minutes for ten consecutive school weeks, starting Monday, January 6, 1930, and closing Friday, March 14, 1930. A typical program for a week was as follows: On Monday drill was given to those pupils who needed it on Type A, Reading To Appreciate the General Significance of a Paragraph; on Tuesday, on Type B, Reading To Predict the Outcome of Given Events; on Wednesday, on Type C, Reading To Understand Precise Directions; and on Thursday, on Type D, Reading To Note Details. On Friday the pupils read orally before the class. The oral reading provided the pupils with a subjective check on their own reading progress. All thirty-three pupils in the room participated in the oral reading.

Each child knew his score on the original test and had been helped by the teacher to realize his individual needs. Pupils usually want to improve their abilities if they are given opportunity to do so, and those taking part in this experiment proved no exception. One of the noticeable outcomes of the experiment was the whole-hearted enthusiasm with which the pupils participated and the interest with which they watched their own progress.

Each child who was not in the drill group read what he chose—recreational reading, reference material in connection with other subjects, newspapers, magazines, etc. He kept a record of what he had read and the amount for each day and wrote short book reports. Some children had only one day a week for this work; others had two, three, or four days, according to the scores which they had made on the initial tests. All thirty-three children did their reading in the regular classroom at the same time. The children in the experimental group knew their own defects, were given definite exer-

cises to overcome their disabilities, and kept a record of their progress during the ten weeks. The pupils needing no remedial work were stimulated to continue reading by the half-hour of independent silent reading and by their presence in the room where the experiment was going on.

The control group, which was in another school, was given the initial test, met for the regular reading lesson for thirty minutes each day, but was given no reading drill planned on the basis of the individual deficiencies revealed in the initial tests. Both groups knew that there would be a final test, which was given on Monday, Tuesday, and Wednesday, March 17, 18, and 19, 1930. For the final test Form 2 of the Gates Silent Reading Tests was used.

MATERIALS USED

A large percentage of the pupils in both groups were of Dutch descent, and many came from homes in which foreign languages were spoken. A slightly larger number of nationalities were represented in the control group. Both schools were in the same quarter of the city, and the patrons of each had approximately the same civic, economic, religious, and social interests.

The experimental group used special exercises prepared for the most part by the teacher of the group. In a classroom experiment of this kind the materials for study often prove to be the great problem. It is difficult to find material organized to suit the plan of instruction. For example, ready-made exercises which emphasize the ability to predict the outcome of given events are difficult to find, as are well-constructed paragraphs emphasizing the ability to appreciate the general significance of a paragraph. Therefore, practically all the exercises used in this study were prepared by the teacher. Descriptions of the four types of exercises[1] are given in the following paragraphs. Since all four types followed somewhat the same plan, a full description of Type A is given as illustrative of the other three. Before the exercises were prepared, error sheets were compiled showing the number of children who missed each question on the standardized test of each type of reading. An at-

[1] All the exercises used in this experiment have been preserved and are on file in the West Leonard School, Grand Rapids, Michigan.

tempt was made to diagnose the difficulty, and the new exercise stressed training in this skill. Each child computed his own daily percentage score and charted it on a progress chart prepared for the purpose. Every child noted his own progress each day and paid little or no attention to his score in comparison to those of other members of the class. As separate charts were kept for each type of reading, some children had one chart only, while others had as many as four. Every mistake was considered separately, and an attempt was made to find out why it had occurred.

Type A. Reading To Appreciate the General Significance of a Paragraph.—The children were given the sixth book of *The Study Readers*[1] and a mimeographed sheet on which the following statement appeared. "Turn to page 156. Read the lesson entitled 'The White Elephant Tells His Story' one paragraph at a time. After reading each paragraph, do as you are told on the paper which has just been given you." The first exercise based on Paragraph 1 read: "Underline the answer which best tells how the elephant remembers his childhood days: (1) very plainly, (2) sadly, (3) not very clearly."

From this story two lessons of fifteen exercises each were made. Some lessons were written entirely by the teacher. One lesson contained a group of eight exercises such as the following: "A boy started a savings account at the bank. Every week he earned twenty cents. He put ten cents in the bank each week. Underline the word that best describes the boy: (1) thrifty, (2) cheerful, (3) dirty, (4) lazy."

The following is an illustration of the type of exercise in which titles are given to paragraphs.

ELEPHANTS[2]

Underline the answer which makes the best title for the paragraph.

"Have you ever seen an elephant in a circus parade? Perhaps you have seen a number of them marching along. Often each elephant has hold of the tail of

[1] Alberta Walker and Mary R. Parkman, *The Study Readers*, Sixth Year. New York: Charles E. Merrill Co., 1925.

[2] This exercise is based on the story, "Elephants in the Circus," in Ernest Horn and Maude McBroom, *Learn To Study Readers*, Book Three, pp. 106–9. Boston: Ginn & Co., 1925.

the elephant in front of him. They march along very quietly. They seem to know just where they belong in the parade."

1. Circus Parade
2. Elephants Holding Tails
3. Elephants Marching Quietly

Type B. Reading To Predict the Outcome of Given Events.—Much the same procedure was followed for Type B as for Type A. Sometimes the first part of a story was used, and the children predicted the end. Again, problems in arithmetic were used, the children being required to decide whether they should add, subtract, multiply, or divide in one-step problems. For the most part, however, the teacher wrote short paragraphs somewhat similar to those used in the Gates tests.

Type C. Reading To Understand Precise Directions.—Exercises of this type were the most easily prepared. Directions were given for making an envelope, a simple barometer, various kinds of drawings, etc. The test of a child's reading ability was the finished product.

Type D. Reading To Note Details.—For exercises of this type paragraph material was selected from readers for the grade. Multiple-choice, true-false, and completion exercises were used as tests. During the final weeks of instruction the *Standard Test Lessons in Reading*[1] were used.

RESULTS

Table II shows the initial and final composite scores on the Gates Silent Reading Tests attained by the pupils in the experimental and control groups, together with the gain or loss for each child and the gain of the experimental over the control group. During the ten weeks the experimental group made an average gain of 1.8 years according to the Gates standard, while the control group showed an average loss of 0.6 of a year. In other words, the intensive drill resulted in an average total gain of 2.3 years. No child in the experimental group failed to make a significant gain, while ten of the twelve children who were present at the final test in the control group showed losses. Why these losses should have occurred is difficult to explain. Neither the principal of the school nor the

[1] William A. McCall and Lelah M. Crabbs, *Standard Test Lessons in Reading*, Book 3. New York: Teachers College, Columbia University, 1925.

teacher of the control group offered any explanation except that most of the children, when compared with all the pupils in the grade, fell into the lower one-fourth in reading ability. It is possible that children of this ability, unless motivated by an unusual procedure, do spasmodic work. In the initial test the novelty of the situation and the nature of the tests may have spurred these pupils to unusual effort. When the final test was given, the novelty had worn off,

TABLE II

COMPOSITE GRADE SCORES ON INITIAL AND FINAL SILENT-READING TESTS MADE BY PUPILS IN EXPERIMENTAL AND CONTROL GROUPS AND GAIN OF THE EXPERIMENTAL OVER THE CONTROL GROUP

PAIR	EXPERIMENTAL GROUP			CONTROL GROUP			GAIN OF EXPERIMENTAL GROUP OVER CONTROL GROUP
	Initial Test	Final Test	Gain	Initial Test	Final Test	Gain	
1*	7.2	9.8	2.6	7.0	.....	.....	.....
2	6.8	8.8	2.0	6.9	6.2	−0.7	2.7
3	6.4	7.2	0.8	6.5	5.1	−1.4	2.2
4	6.3	7.5	1.2	6.2	5.1	−1.1	2.3
5	6.3	9.0	2.7	5.9	5.6	−0.3	3.0
6	6.2	7.2	1.0	5.8	6.1	0.3	0.7
7	6,0	8.5	2.5	5.8	6.6	0.8	1.7
8	5.9	7.6	1.7	5.8	4.6	−1.2	2.9
9	5.6	8.1	2.5	5.7	5.3	−0.4	2.9
10	5.4	6.2	0.8	5.7	4.5	−1.2	2.0
11	5.3	6.6	1.3	5.4	5.1	−0.3	1.6
12	4.9	7.0	2.1	4.9	3.6	−1.3	3.4
13	4.7	7.0	2.3	4.7	4.3	−0.4	2.7
Average	5.9	7.7	1.8	5.9	5.2	−0.6	2.3
Standard deviation	0.7	1.0	.....	0.7	0.8	.....	.....

* One of the pupils in this pair was absent on the day of the final test.

and nothing unusual had been done to spur their interest during the intervening time. A check of the conditions under which the testing had been done revealed no variations in the procedure outlined by the author of the tests. The gain of the experimental group is too large to be explained on the basis of chance. It might be explained in terms of capacity or heredity, but Table I shows that the average intelligence quotients of the two groups are not significantly different. The gain might be explained in terms of ability or general power to accomplish, but the edu-

cational background of the two groups is about the same. The writers feel that the explanation is in terms of specific achievement. The experimental group knew their own needs and were given exercises specially prepared to meet those needs. The individual progress charts showed them that each pupil was accomplishing and succeeding, and thus was built up the will to work, which is essential to marked achievement in any line of endeavor.

Was this gain made at a sacrifice to other features of the school's program? The teacher in charge of the grade and the principal of the school report just the opposite. The abilities stressed in the exercises are fundamental to success in most of the other subjects in the grade. As the children became proficient in the reading abilities, they gained a new insight into the other subjects and developed a better attitude because they were conscious of their own success. The enthusiasm developed by the experiment seemed to carry over to the other lines of activity in the school.

Data not given in this article show the gains made in each of the four types of reading. The experimental group showed an average gain of 2.3 years on Type A, Reading To Appreciate the General Significance of a Paragraph, while the control group showed an average loss of 0.2 years. On Type B, Reading To Predict the Outcome of Given Events, the experimental group made an average gain of 1.8 years, and the control group made an average loss of 1.4 years. On Type C, Reading To Understand Precise Directions, the experimental group gained an average of 2.9 years, while the control group showed an average loss of 0.3 of a year. In only one case did the control group show a gain; on Type D, Reading To Note Details, they made an average gain of 0.07 of a year, while the experimental group made an average gain of 2.9 years.

An interesting question arises as to what happened to those children in the experimental group who were excused from drill on a given type of reading. This question is answered by Table III, which shows the gains made by those children who were included in the experiment but were excused from drill on Type B. This group made an average gain of 0.3 of a year, while their respective pairs in the control group showed an average loss of 1.6 years. As has already been stated, those children who received specific drill

in this ability made an average gain of 1.8 years. An examination of the other types revealed a similar condition. The gains made by

TABLE III

GRADE SCORES ON INITIAL AND FINAL TESTS ON TYPE B OF PUPILS IN EXPERIMENTAL GROUP NOT TAKING TRAINING EXERCISES IN TYPE B AND COMPARISON OF THEIR SCORES WITH THOSE OF MATES IN CONTROL GROUP

PAIR	EXPERIMENTAL GROUP			CONTROL GROUP			GAIN OF EXPERIMENTAL GROUP OVER CONTROL GROUP
	Initial Test	Final Test	Gain	Initial Test	Final Test	Gain	
1	8.0	8.5	0.5	8.5	7.0	−1.5	2.0
2	7.0	8.0	1.0	8.0	7.5	−0.5	1.5
3	7.5	7.0	−0.5	8.0	5.5	−2.5	2.0
4	.....	.....	.....	.....	.....	.....	.....
5	7.5	7.5	0.0	6.5	5.0	−1.5	1.5
6	7.0	6.5	−0.5	6.0	7.5	1.5	−2.0
7	7.0	7.5	0.5	6.0	3.9	−2.1	2.6
8	6.5	6.5	0.0	7.0	4.2	−2.8	2.8
9	.....	.....	.....	.....	.....	.....	.....
10	.....	.....	.....	.....	.....	.....	.....
11	.....	.....	.....	.....	.....	.....	.....
12	6.5	8.0	1.5	6.5	3.1	−3.4	4.9
13	.....	.....	.....	.....	.....	.....	.....
Average	7.1	7.4	0.3	7.1	5.5	−1.6	1.9
Standard deviation	0.5	0.7	.....	0.9	1.6	.....	.....

TABLE IV

AVERAGE GAINS MADE BY PUPILS IN EXPERIMENTAL GROUP ACCORDING TO NUMBER OF TYPES OF DRILL ENGAGED IN

Number of Types of Drill Engaged In	Number of Pupils	Average Gain
One	3	1.3
Two	5	1.9
Three	4	2.0
Four	1	2.3

the children in the experimental group who were excused from certain types were slightly above the gain suggested by the author of the tests. The gain indicated by Gates for ten weeks' work is about 0.25 of a year; these children made a gain of 0.3 of a year. The writ-

ers believe this gain can be accounted for, at least in part, by the interest and enthusiasm built up by the experiment in general.

Another interesting question arises with regard to what happened to those children who received drill in one, two, three, and four types, respectively. Table IV shows that the average gains increased according to the number of types of drill in which the children were engaged.

CONCLUSIONS

The results of the study reported in this article justify the following conclusions.

1. Drill in reading based on the types of skill in which the Gates Silent Reading Tests show a child to be deficient is superior to drill in which the child's need is not isolated.

2. Children with intelligence quotients below the average can greatly improve their reading abilities if they are provided with specific training.

3. Purposeful reading drill, for which the child realizes his own need, as part of an organized remedial program is superior to the casual teaching of reading.

4. The total gain in reading ability varies directly in proportion to the number of types of reading in which the pupil receives specific drill.

5. It was evident throughout this experiment that many concomitant learnings were taking place. The eagerness and interest with which the children watched their own improvement on the score cards, their sustained interest in continued drills to improve one skill, and their co-operative help to others within the group all contributed not only to their general reading ability but to habits of good citizenship. Because of their very nature many of these results cannot be measured objectively, but they are always the ultimate results any teacher wishes to secure from her work.

6. Returning to the question used as a basis of the experiment, the writers conclude that reading drill definitely planned to meet the specific reading problems of an individual are effective for any child whose reading shows a deficiency.

TRANSFER OF LEARNING IN SIMPLE ADDITION AND SUBTRACTION. II

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TRANSFER FROM TAUGHT TO UNTAUGHT COMBINATIONS

In the preceding article of this series[1] the chief matter of interest consisted in the effect of teaching 200 number combinations in addition and subtraction compared with that of teaching only 110 combinations. It was shown that the group of pupils who studied 110 combinations knew at least as many combinations in toto as the group studying 200 combinations but that the latter group knew a slightly larger percentage of the combinations which had been left untaught than did the former group.

The present article deals with the results of the experiment chiefly from the point of view of transfer. In any one of the four tests how many of the combinations which had not been taught up to the time of the administering of the test did all the pupils in the experiment know? This problem raises the question: To what extent did drill on certain taught combinations transfer to other untaught combinations? An answer to the latter question hinges in part on the number of combinations children learn outside the regular arithmetic class periods. For this reason, a table will be included showing how much two groups of children learned outside the periods of arithmetic instruction. One group (designated as Group A) comprised one hundred children who received no instruction in arithmetic for the last twelve of the seventeen weeks of the experiment; another group (designated as Group B) comprised eighty-six children who had no formal arithmetic instruction during the entire seventeen weeks. Table III shows the scores achieved by these two groups.

The reader will receive a better impression of the situation by referring to Figure 1. In this figure the average scores in addition

[1] Herbert T. Olander, "Transfer of Learning in Simple Addition and Subtraction. I," *Elementary School Journal*, XXXI (January, 1931), 358–69.

and subtraction combined for the group receiving daily instruction for seventeen weeks on 110 combinations, the scores for the group without formal instruction for twelve weeks (Group A) and the scores for the group without formal instruction for the entire seventeen weeks (Group B) are presented. Because Group B had, unfortunately, had an unusual amount of informal arithmetic in the first

TABLE III

AVERAGE SCORES ON TAUGHT AND UNTAUGHT COMBINATIONS IN ADDITION AND SUBTRACTION ACHIEVED BY GROUP A* AND BY GROUP B†

COMBINATIONS	AVERAGE SCORE IN ADDITION		PROBABLE ERROR OF SCORES IN ADDITION		AVERAGE SCORE IN SUBTRACTION		PROBABLE ERROR OF SCORES IN SUBTRACTION		AVERAGE SCORE IN ADDITION AND SUBTRACTION COMBINED	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
Test 1:										
Taught	5.54	20.31	0.62	1.34	3.72	12.20	0.31	0.95	4.65	16.26
Untaught	5.01	17.32	0.57	1.08	2.83	10.34	0.24	0.77	3.94	13.83
Total	10.55	37.63	.....	.....	6.55	22.54	.....	.....	8.59	30.09
Test 2:										
Taught	22.47	23.22	1.14	1.31	13.64	15.11	0.74	0.97	17.99	19.12
Untaught	19.81	20.31	0.93	1.05	11.15	11.68	0.65	0.77	15.41	15.94
Total	42.28	43.53	.....	.....	24.79	26.79	.....	.....	33.40	35.06
Test 3:										
Taught	28.12	27.88	1.19	1.29	14.87	17.62	0.79	0.98	21.20	22.72
Untaught	23.55	23.53	1.00	1.09	12.39	13.38	0.70	0.85	17.72	18.42
Total	51.67	51.41	.....	.....	27.26	31.00	.....	.....	38.92	41.14
Test 4:										
Taught	30.89	34.20	1.19	1.25	17.83	15.28	1.05	1.21	24.51	25.24
Untaught	25.20	27.99	1.00	1.07	15.13	11.04	0.89	0.96	20.28	19.96
Total	56.09	62.19	.....	.....	32.96	26.32	.....	.....	44.79	45.20

* Group A was given no formal instruction in arithmetic during the last twelve weeks of the experiment.

† Group B had no formal instruction in arithmetic during the seventeen weeks of the experiment.

grade, the average initial score of the group was unusually high; for that reason, this score is difficult to compare with the average initial scores of the other two groups. Comparison of the gains made by the three groups during each of the three periods of the experiment shows that Groups A and B, during the time when they had no formal arithmetic instruction, learned approximately from one-third to one-half as many combinations per unit of time as

were acquired by Group A during the first five weeks when it had daily formal arithmetic work or as were acquired during the entire seventeen weeks by the group learning 110 combinations. That the arithmetic instruction was effective is, therefore, clearly evident in a comparison of the scores of the three groups. The question which then becomes pertinent is: Was the arithmetic instruction equally effective in the case of the taught and untaught combinations?

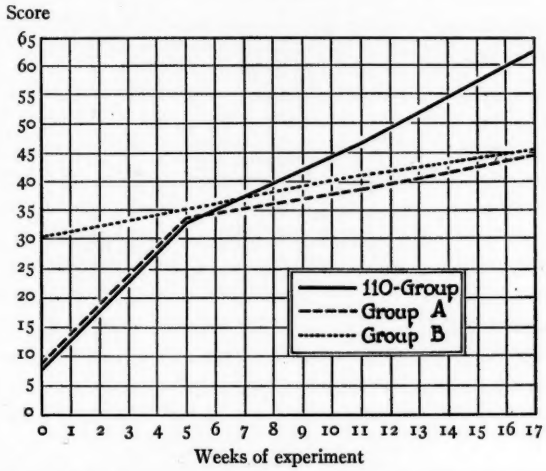

FIG. 1.—The average scores in addition and subtraction combined achieved by the group drilled in 110 number combinations, by Group A (the group having no formal arithmetic for twelve weeks), and by Group B (the group having no formal arithmetic for the entire seventeen weeks).

In Table II percentages for the average scores in addition and subtraction combined for the group studying 110 combinations and those for the group studying 200 combinations were presented. In Table IV similar data are given for Groups A and B. The interesting point to observe in both Tables II and IV is the regularity with which the pairs of percentages on taught and untaught combinations approximate 55 and 45, as expected by pure chance. The groups studying 110 and 200 combinations were constantly receiving instruction on an increasing number of the taught combinations. If the learning of simple number combinations is specific to any large

degree, one would expect to find that the percentage of the scores on the taught combinations in the case of these two groups would progressively increase beyond 55 per cent whereas the percentage of the scores on the untaught combinations would progressively decrease below 45 per cent. However, no such fact is to be observed. Table IV reveals that environment apparently influenced equally

TABLE IV

AVERAGE SCORES ON TAUGHT AND UNTAUGHT COMBINATIONS IN ADDITION AND SUBTRACTION COMBINED AND PERCENTAGE EACH IS OF TOTAL SCORES ACHIEVED BY GROUP A AND GROUP B

COMBINATIONS	GROUP A		GROUP B	
	Score	Percentage of Total Score	Score	Percentage of Total Score
Test 1:				
Taught	4.65	54.1	16.26	54.0
Untaught	3.94	45.9	13.83	46.0
Total	8.59	100.0	30.09	100.0
Test 2:				
Taught	17.99	53.9	19.12	54.5
Untaught	15.41	46.1	15.94	45.5
Total	33.40	100.0	35.06	100.0
Test 3:				
Taught	21.20	54.5	22.72	55.2
Untaught	17.72	45.5	18.42	44.8
Total	38.92	100.0	41.14	100.0
Test 4:				
Taught	24.51	54.7	25.24	55.8
Untaught	20.28	45.3	19.96	44.2
Total	44.79	100.0	45.20	100.0

the pupils' facility with the taught and untaught combinations. Table II bears witness to the fact that teaching apparently influenced equally the pupils' performance on taught and untaught combinations. In general, the percentages in Table II show no striking differences from those in Table IV.

Since no teaching had been given any group of pupils before Test 1, the pairs of percentages on this test should be exactly 55 and 45. The percentages given in Table II indicate that the untaught combinations were the easier; in Table IV this condition is reflected to

a less degree. Were the taught and untaught combinations of equal difficulty in reality? Two reasons support an affirmative answer to this question. First, the previous article described the conscientious attempts to make the two sets of combinations equal. Second, if the untaught combinations had been easier, Groups A and B, which were given little or no instruction on the combinations, should have achieved higher scores on the untaught combinations. That they did not do so is shown by Table IV. For Group B, which had no instruction whatsoever on either set of combinations, the percentages on the untaught combinations exceeded 45 per cent (the percentage expected by pure chance) in two tests and were less than 45 per cent in two tests.

The almost complete transfer from taught to untaught combinations is indicated graphically in Figure 2, which shows the percentages for three groups of pupils who were formally taught arithmetic for all or part of the time, namely, the group studying only 110 combinations, the group studying 200 combinations, and the group receiving no arithmetic instruction during the last twelve of the seventeen weeks. The percentages for the untaught combinations are shown by the black bars; those for the taught combinations, by the shaded bars. According to mere laws of chance, the black bars should approach the broken line representing 45 per cent, and the shaded bars should approach the broken line representing 55 per cent. As stated before, one would surmise that the black bars would progressively become shorter from Test 1 through Test 4 in the case of the groups learning 110 and 200 combinations, respectively (except in Test 4 for the latter group). A mere glance at the figure shows that such an assumption is incorrect.

EQUALITY OR INEQUALITY OF MATCHED GROUPS

Since no attempt was made to equate groups according to such factors as age, intelligence, etc., the question might be asked: If children were paired on the bases originally decided upon (initial score in arithmetic, gains in score during five weeks of instruction, and teaching method), to what extent would inequality in various other factors account for the differences in learning arithmetic appearing after the period of time for which the groups were matched?

The writer will offer the results of a technique which he devised in attempting to arrive at an answer to this problem.

The average age of the pupils, the number of pupils of foreign parentage, the average rating of the teachers by their supervisors, the average intelligence rating on the Detroit Advanced First-Grade

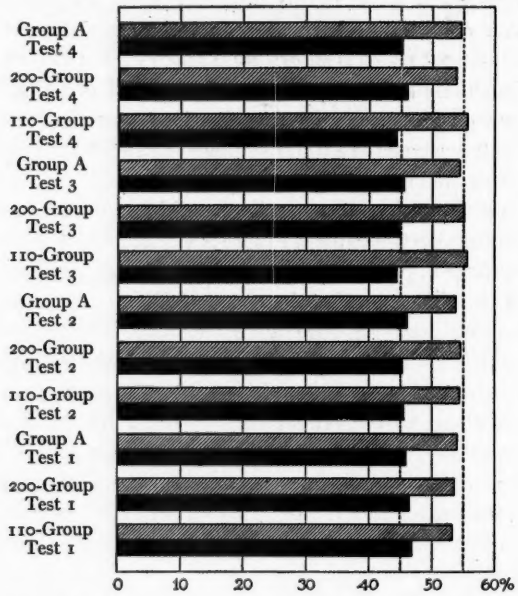

FIG. 2.—The relative percentages of taught and untaught combinations achieved by the group learning 110 combinations, by the group learning 200 combinations, and by Group A (the group having no instruction for twelve weeks) on Tests 1, 2, 3, and 4 in addition and subtraction combined. (Black bars represent untaught combinations and shaded bars taught combinations.)

Intelligence Test, the average score on the Detroit Reading Test for Second Grade, and finally the average number of days' attendance during the experiment were calculated for two groups of pupils, namely, the group of 296 children who had studied 110 number combinations and the group of 296 children paired with those who had studied 200 combinations. The results showed that all the averages on the six factors were in favor of the group studying 110 com-

binations. (Foreign parentage may or may not be favorable in the learning of arithmetic. It is also true that reading and others of the factors listed may or may not have a bearing on the question.) The writer then proceeded to withdraw from the 296 pairs of pupils those for whom the records on the six factors especially favored the group studying 110 combinations. That is, an attempt was made to eliminate from this group those pupils for whom the records on the six factors were high who were paired with pupils in the group studying 200 combinations for whom the records on these factors were low. More explicitly, the plan was to eliminate from the matched groups a pair of pupils for whom the data were of such character that the pupil representing the group studying 110 combinations had comparatively higher figures for intelligence, age, etc., than the pupil in the group studying 200 combinations with whom he had been paired. Naturally, it was seldom possible to find a pair of pupils for whom the records showed higher figures on all six factors for the pupil in the former group. The experimenter was satisfied if he found a pair of pupils for whom the records showed that the pupil in the group studying 110 combinations excelled in the majority of the six factors. Thus, a leveling of the two groups resulted which tended to equalize them with respect to six factors. Two groups of pupils then remained which were still equal on Tests 1 and 2 in arithmetic and on teaching method, since these were the bases for equating in the experiment, but which were more equal on six other variable factors.

In the process of withdrawal of pairs of pupils seventy-two pairs were removed. Thus, comparisons can be made of the arithmetic scores of two groups of 296 pairs of pupils and two groups of 224 pairs of pupils, the members of the pairs of the latter groups being more alike in certain factors, other than arithmetic, than is the case with the members of the pairs of the former groups. Table V shows the results of the technique of withdrawing pupils which has just been described. What effect did the greater equality in six variable factors have on the comparative scores on Tests 3 and 4?

In Table VI are shown the average scores for addition and subtraction combined for the two groups before the seventy-two pairs of cases were removed and after they were withdrawn. As before,

the groups of 224 pupils are paired on Tests 1 and 2. It will be noted that, with one exception, the group studying 110 combinations still achieved higher average scores on Tests 3 and 4 even after the equalization of the two groups with respect to six contributing factors. Therefore, it may be said that when 296 pairs of pupils composing the groups learning 110 and 200 combinations, respectively, were matched with respect to initial arithmetic score, gains in scores over

TABLE V

DATA ON SIX FACTORS FOR TWO GROUPS OF 296 PUPILS, ONE GROUP HAVING STUDIED 110 COMBINATIONS AND THE OTHER 200 COMBINATIONS, AND FOR SAME TWO GROUPS AFTER 72 SELECTED PAIRS OF PUPILS HAD BEEN WITHDRAWN

	Groups with 296 Pupils			Groups with 224 Pupils			Percentage of Decrease of Advantage
	110-Group	200-Group	Advantage of 110-Group	110-Group	200-Group	Advantage of 110-Group	
Age in months	90.57	88.62	1.95	90.25	89.38	0.87	55
Number of children of foreign parentage	144	118	26	102	92	10	62
Supervisors' ratings of teachers*	3.60	4.30	0.70	3.71	4.18	0.47	33
Intelligence rating†	3.78	4.21	0.43	3.77	4.15	0.38	12
Score on reading test‡	5.05	3.16	1.89	4.98	3.46	1.52	20
Number of days of attendance§	75.54	73.88	1.66	74.91	74.65	0.26	84

* This rating is based on a nine-point scale—A, A−, B+, B, B−, C+, C, C−, and D—in which A is represented by 1, A− by 2, etc.

† This rating is based on a seven-point scale—A, B, C+, C, C−, D, and E—in which A is represented by 1, B by 2, etc.

‡ The highest possible score in this test is 24.

§ The highest possible number of days of attendance is 85.

a period of five weeks, and teaching method, the influence of other factors—such as age, teachers' ratings, and intelligence—was counterbalanced so far as the effect of the latter on the learning of arithmetic was concerned.

It will be noted that the writer succeeded in decreasing the difference in intelligence of the pupils in the group of 224 pupils and in the group of 296 pupils by only 12 per cent. Since this amount is small, what further assurance is there that intelligence was not a potent factor in the acquisition of number combinations? Two items of evidence may be mentioned. First, correlations, which are not

included in these articles, were worked out in this study between intelligence and arithmetic scores on two tests in addition and two tests in subtraction for the 592 pupils in the groups studying 110 and 200 combinations. These correlations ranged from only .22 to .28, with an average of .24. Second, although the bright pupils made higher average scores on all tests than did the dull pupils, the dull pupils made larger gains in percentages during the seven-

TABLE VI

AVERAGE SCORES ON TAUGHT AND UNTAUGHT COMBINATIONS IN ADDITION AND SUBTRACTION COMBINED OF TWO GROUPS OF 296 PUPILS EACH AND OF THESE SAME GROUPS WITH 72 PAIRS OF PUPILS REMOVED

COMBINATIONS	GROUPS WITH 296 PUPILS		GROUPS WITH 224 PUPILS	
	110-Group	200-Group	110-Group	200-Group
Test 1:				
Taught	4.21	4.23	5.08	5.08
Untaught	3.71	3.67	4.46	4.39
Total	7.92	7.90	9.54	9.47
Test 2:				
Taught	17.98	17.94	19.12	19.00
Untaught	15.00	14.87	15.93	15.87
Total	32.98	32.81	35.05	34.87
Test 3:				
Taught	25.79	25.05	26.78	26.01
Untaught	20.71	20.39	21.56	21.17
Total	46.50	45.44	48.34	47.18
Test 4:				
Taught	34.93	32.36	35.95	33.64
Untaught	27.79	27.73	28.38	28.84
Total	62.72	60.09	64.33	62.48

teen weeks of the experiment. Since the pairs of pupils were matched on the total scores in addition and subtraction in Tests 1 and 2, the conclusions of the experiment must perforce be based on *gains* in scores from Test 2 to Test 4.

CONCLUSIONS

The conclusions of the study may be summarized as follows:

1. A group of pupils who were taught one hundred simple number combinations in addition and one hundred simple number combina-

tions in subtraction achieved no higher scores on all the two hundred combinations than did a group of pupils who were taught only fifty-five combinations in each of the two processes. The group which studied all the combinations attained a slightly higher proportionate score on the combinations that remained untaught in the other group. Conversely, therefore, the group which studied only the fifty-five combinations in each process achieved slightly higher scores on these particular combinations than did the group which studied one hundred combinations in each process. Consequently, as far as an individual child was concerned, it mattered little in which group he happened to be placed; the total number of combinations learned was the same.

2. The ability gained by children on fifty-five simple number combinations in addition and on fifty-five similar combinations in subtraction transferred almost completely to the forty-five remaining simple number combinations in each of the two processes.

3. Between addition and subtraction little significant difference in transfer was found. In subtraction the amount of transfer was only slightly less than in addition.

4. The results of this study suggest that, in his early work with simple number combinations in addition and subtraction, a child does not learn these combinations as so many separate entities or bonds—that is, as one hundred feats of memory in each of the two processes under consideration—but that he probably learns them rather as a system of interrelated experiences. Therefore, in early number work, at least, concern on the part of a teacher to teach every one of the simple number combinations probably represents effort that could be directed more advantageously.

5. A method utilizing a few minutes of generalization daily showed no significant effect on the arithmetic scores of the pupils taught by this method. The absence of any apparent effect may be accounted for by one or more of the following explanations: (*a*) The function practiced was too narrow to necessitate special stress on generalization, that is, the children generalized without help from the teacher. (*b*) The length of time spent in generalization —three minutes of a twenty-minute class period—was too brief.

(*c*) The children were too immature to profit from abstract verbal generalizations.

6. Examination of the scores of one group of children who had no formal instruction in arithmetic for twelve out of the seventeen weeks of the experiment and of another group who had no formal arithmetic instruction whatsoever during the entire seventeen weeks shows that, during the time when no class instruction in numbers was being given, the children learned from approximately a third to less than a half as many number combinations as did the children who were being given the regular class instruction. A further fact to be observed is that influences outside of the regular arithmetic instruction periods affected equally the taught and untaught number combinations.

7. Groups of children may be unequal in such traits as age, intelligence, etc., and these traits may so counterbalance each other that equality in a function, such as that of the learning of arithmetic, may still exist.

ADMISSION PROCEDURES AND STANDARDS FOR CLASSES FOR MENTALLY DEFICIENT AND BACKWARD CHILDREN

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In a survey of special education in the Baltimore schools made in the spring of 1929, the writer recommended that a division of special education be established to take over the supervision, administration, and development of special classes for all kinds of physically and mentally handicapped children and that a psycho-educational clinic be set up within the division for the examination, diagnosis, and assignment of children to the classes for the mentally handicapped.[1]

In conformity with this recommendation and upon the approval of the superintendent of schools, the Board of School Commissioners established a division of special education and invited the writer to become its director during the year 1929–30. The director was to set up standards for the organization of different kinds of special classes and to establish procedures for reporting and examining candidates for special classes and procedures for assignment and transfer to such classes.

Because of the large number of requests received from school systems throughout the country for copies of the regulations governing the organization of classes for mentally handicapped children, it is believed that the following statement of the Baltimore plan[2] will be of interest to educators, clinical psychologists, superintendents, supervisors of special classes, and others charged with the responsibility of developing efficient and economical systems of special classes which will meet the needs of mentally retarded children

[1] J. E. W. Wallin, *A Brief Survey of Special Education in the Public Schools of Baltimore.* Baltimore: City Department of Education, 1929. Copies of this survey may be obtained without charge by addressing the superintendent of schools in Baltimore.

[2] This statement is generalized from the school regulations promulgated on September 20, 1929.

of different levels of ability. The practicability of the plan of organization of classes and of the examination procedure here outlined, for both small and large city school systems, has been amply demonstrated by use during more than fifteen years in many school systems.

TYPES OF CLASSES

The basic idea underlying the recommendations is that separate classes should be maintained for the more gravely retarded children (hereinafter called "mentally deficient" children) and for the less gravely retarded children (the borderline and backward pupils). Little advance in this field of public education can be expected so long as subnormal children of all levels of ability are indiscriminately assigned to the same classes. It is a well-known and lamentable fact that many school systems have made practically no progress in the scientific differentiation of their mentally handicapped pupils since the first classes were opened in this country in the last decade of the last century. The irreducible minimum for efficient special-class work in all school systems with a sufficient enrolment is a dual system of classes, one type for the mentally deficient pupils and another type for the backward and borderline children. The situation will be further improved if the dual system can be supplemented by an elastic system of sections for slow, average, and bright children and by shop courses and prevocational classes for children over twelve years of age.

1. *Classes for mentally deficient children.*—No child should be assigned to a class for the mentally deficient except after a comprehensive clinical examination and upon the recommendation of a competent specialist in mental deficiency, mental pathology, and clinical and abnormal psychology. The essentials of the examination will be indicated on a later page. The admission standards should, in general, be the following: a range in intelligence quotient on the Stanford-Binet test from 35 to 65 or 70, a range in mental age on the Stanford-Binet test from about three to nine years, and a general educational efficiency level from pre-kindergarten to beginning third-grade work.

Although the special classes are specifically designed for mentally deficient children, they should not be referred to, in conversation

with parents or in announcements to the general public, as classes for feeble-minded, mentally deficient, mentally defective, or subnormal children, nor by any other term that is likely to give offense to parents or pupils.[1]

Two or more classes should be located in one school wherever possible so that the instruction may be departmentalized or homogeneous groupings effected. The classes should serve the needs of a number of schools. The enrolment in single-class units should be about sixteen and in multiple-class units from eighteen to twenty.

If worth-while results are to be achieved in these special classes, elastic differential programs of work must be introduced. The training should be genuinely remedial, corrective, and developmental. The major divisions of the curriculum will include kindergarten and sensorimotor training; a program of graded and diversified industrial arts; the elements of the literary fundamentals presented concretely and in correlation with the other activities of the classroom; games, plays, rhythm work, remedial physical training, and health work; music, opening exercises, and entertainments; speech development and correction; and moral training given for the purpose of correcting hampering personality defects and of developing desirable social and vocational traits.

The special classes are not intended to be restoration classes; but, whenever a child's progress exceeds expectations and it appears that he may be able to do satisfactory work in a class for backward children, in a slow section, or in a regular grade, he should be referred to the proper authority for reconsideration or re-examination. When they are about thirteen years of age, the higher-grade pupils in the special classes should be transferred to shop centers, maintained separately for boys and girls, in which higher forms of prevocational training and, if possible, a limited offering of trade training should be supplied. The classes for the younger children should be coeducational.

In the school systems of large cities the number of children who should be assigned to classes for the mentally deficient will probably

[1] One of the subcommittees of the White House Conference on Child Health and Protection is considering the question of recommending a uniform nomenclature for special classes of different types. For this reason no terms are applied to the classes in this article.

be somewhat less than 1 per cent of the elementary-school enrolment. The ratio, however, will vary greatly in individual schools according to the social and economic status of the community in which the school is located.[1]

2. *Classes for borderline and backward children.*—To these classes should be assigned children who are generically (all-round) backward intellectually, who are on the borderline of mental deficiency but not clearly mentally deficient, and who are of doubtful diagnosis from the standpoint of intellectual and scholastic competency. In general, the intelligence quotient of the children assigned should vary on the Stanford-Binet test from about 65 to about 85, and the children should possess a potential educational level of about third grade to sixth grade, the determination being based on teachers' ratings and the results of standardized attainment tests.[2]

It is preferable to assign restoration cases—children who are potentially normal mentally but who are educationally retarded—to sections designed for preliminary tryouts for backward children and to restore them to their grades as expeditiously as possible. They may remain in the regular grades if the enrolment permits individual attention and remedial instruction. Nevertheless, it is sometimes desirable, because of administrative limitations, to assign such children to classes for the borderline and backward, and this practice may be countenanced provided the children are given concrete and remedial instruction and hygienic treatment which will restore them to grade without unnecessary delay.

The success of the classes for borderline and backward cases de-

[1] J. E. Wallace Wallin, *The Education of Handicapped Children*, pp. 144–45. Boston: Houghton Mifflin Co., 1924.

[2] The two investigations on which the conclusion here stated regarding the maximum ability of borderline and backward children is based were limited to children who withdrew from school at the age of fourteen. Had the children withdrawn at fifteen or sixteen, the maximum level might have been the seventh grade. See the following references:

a) J. E. Wallace Wallin, *The Achievement of Sub-normal Children in Standardized Educational Tests.* Miami University Bulletin, Series No. 7. Oxford, Ohio: Teachers College of Miami University, 1922.

b) J. E. Wallace Wallin, "The Pedagogical Status of the Feeble-minded School Children," *Elementary School Journal*, XVIII (April, 1918), 588–97.

c) J. E. Wallace Wallin, "The Achievement of Mental Defectives in Standardized Educational Tests," *School and Society*, X (August 29, 1919), 250–56.

pends primarily upon the adaptation of the curriculum to the individual needs of an exceedingly varied assortment of mentally and educationally handicapped children. The curriculum should be as flexible and varied as it is in the classes for the mentally deficient, but more attention should be given to developmental and remedial work in the literary subject matter.

These classes should serve as observation classes, or clearing houses, in conjunction with the psychological or psycho-educational clinic, for children of doubtful mentality. While it is desirable that before their admission to these classes all candidates be given the examination to which later reference is made, this requirement cannot always be fulfilled because of the lack of an adequate staff of examiners. Therefore, transfers to the classes for backward children may be made by the principal of the school, with the approval of the director or supervisor of special classes or the director of the appropriate clinic, on the basis of the educational records and the results of group intelligence and attainment tests. All children so transferred who after a reasonable period of probation have made only limited progress should be given thorough individual examinations. As a result of the examinations the children will be retained in the class for the backward and be given less abstract work and an increasing amount of hand work, or they will be transferred to the classes for the mentally deficient.

The enrolment standard, based on average daily attendance, should be about twenty-two in single-class centers and about twenty-five in multiple-class centers.

At about the age of thirteen the children in these classes should be transferred to boys' and girls' prevocational schools whenever such schools are available.

Probably from 2 to 3 per cent of the elementary-grade pupils in large school systems belong in classes of this type, but the ratio will differ greatly in different school buildings.

3. *Slow sections for backward and borderline cases.*—Backward children may be assigned by the principal, on the basis of their school records and the results of group intelligence and achievement tests, to slow sections for preliminary tryouts. In these sections the pupils should be carefully studied by the teachers and be given ade-

quate individual assistance and such specialized developmental and remedial instruction as they may require. Those who are brought up to grade should be transferred to the section or grade in which they belong; the less seriously backward may be continued in the slow sections for a longer period for further study and remedial instruction, while those who have shown the smallest capacity to respond should be referred to the proper authorities for clinical study.

It is obvious that the slow sections will also serve as clearing houses, in conjunction with the clinic, for children of uncertain mental status.

If the most satisfactory results are to be secured, it is important that retarded children be transferred as early in their school careers as possible to the classes for the mentally deficient or to the classes for the borderline and backward children or to the slow sections.[1]

PROCEDURE OF REFERRING AND EXAMINING CANDIDATES FOR CLASSES FOR THE MENTALLY HANDICAPPED

The practicability of the following co-operative procedure, in which different investigations are distributed among various departments and school officials, has been amply demonstrated in many school systems in which the plan has been followed. Where the voluntary method of reporting children for examination is in force and the facilities for individual examinations are limited, the principals should carefully survey their schools, in co-operation with the teachers and supervisors. On the basis of the school records and the results of group intelligence and attainment tests, they should refer to the proper local, state, or other clinic for clinical study the children in the schools who are intellectually the most backward and the children who present special problems. Two systematic surveys of retarded pupils should be made annually.

The individual case studies should include at least five fundamental fields of inquiry: a general physical examination; the educational record, including teachers' estimates of personal characteristics and the results of standardized group intelligence and attainment tests;

[1] Further details with regard to the methods of organizing special classes may be found in J. E. Wallace Wallin, *The Education of Handicapped Children*, pp. 97–113, 129–54, 160 (seventh to ninth references). Boston: Houghton Mifflin Co., 1924.

the personal history; the family history; and the psychological examination. The following procedure for filling out the forms used in securing this information has proved effective and economical.

1. As soon as a child has been designated for examination, the principal (either in person or through the teacher, the nurse, the attendance officer, or other designated official) should communicate with the child's parent or guardian, tactfully explaining that the child is not progressing satisfactorily and that it is necessary to make a careful investigation of his case in order to discover the causes of his difficulties and to provide the educational opportunities which his condition requires. In no case should teachers or other school officers be permitted to threaten the child with transfer to a special class for the mentally deficient. The assignment of a child to a special class should be represented as a privilege, not as a penalty for failure to do acceptable work or for misbehavior. The results of the examination should not be anticipated. To handle a problem case of this type without arousing unnecessary criticism requires unusual tact and skill on the part of all members of the teaching and examining force.

2. After the interview with the parents the principal should have a physical examination made by the school health officer, by the family physician (if the parents prefer), or by some other co-operating physician. The educational record should be supplied by the pupil's teacher and principal, and a blank relating to the environmental factors and the personal and family histories should be filled out by the school or psychiatric nurse, by the visiting teacher, by the child's teacher or principal, or by the attendance officer.

3. After the principal has checked the forms to make sure that all have been returned and that all the data have been properly supplied, they should be sent to the bureau or clinic in charge of examinations and assignments. The exact date of birth of the child should be verified in every case. If the reported age differs on the forms, the principal or teacher should make every effort to ascertain the correct age before the forms are sent to the clinic.

4. Upon receipt of the forms the clinic will arrange, through the principal, for the psychological examination at the clinic by a psychometrist or a psycho-educational examiner. It is always advisable

to have one of the parents take the child to the clinic in order that the case may be properly explained and that needed instruction and advice may be given the parents. When a number of children are to be tested, the psychological tests may be given advantageously in the school provided a quiet, well-illuminated room with the needed equipment is available.

5. Whenever possible, the child should finally be seen by a clinical psychologist or expert in mental and educational pathology, who has been given all the data, for diagnosis, consultation, and assignment. This person should be as thoroughly qualified for this type of school service as a well-trained psychiatrist is qualified for work in psychiatry.[1]

6. A brief report of the essential findings and recommendations of the examiner should be sent to the principal. The report should in all cases be accessible to the child's teacher and should be transmitted with the transfer cards to any school to which the child may be transferred. All such reports are for professional use only and should never be given publicity. Various items of information important for diagnosis and prognosis, secured as "privileged information" and so regarded under statutory law, should not be revealed in these reports, although they may be submitted to courts when the child is a court case.

7. Upon receipt of the report the principal should take the necessary steps to place the child in accordance with the recommendations. If the parent did not confer with the clinical psychologist, the principal should see that the medical advice and other recommendations are carried out.

8. In order to avoid unnecessary trips to the clinic, parents of children not in public schools should be advised to bring them to the public school in the district in which they reside. The principal should then arrange for the filling-in of the preliminary blanks and forward them to the clinic.

[1] The nature of the training required by qualified clinical psychologists is given in J. E. Wallace Wallin, *Clinical and Abnormal Psychology*, pp. 127–30, 172–73. Boston: Houghton Mifflin Co., 1927.

LEGAL AUTHORITY OF BOARDS OF EDUCATION TO ENFORCE RULES AND REGULATIONS. I

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Statutes usually confer upon boards of education broad powers with respect to the conduct and management of the schools. Since it is impossible for the statutes to enumerate in detail the powers which a board may exercise, the courts are frequently called upon to decide whether a board of education has exceeded its authority in attempting to enforce a particular rule or regulation. The purpose of this article is to state the principles of the case or common law governing the authority of boards of education to enforce rules and regulations.

GENERAL AUTHORITY TO REGULATE THE CONDUCT OF PUPILS

In determining whether school officers or teachers have authority to enforce a particular rule or regulation governing the conduct of pupils, the courts universally apply the test of reasonableness. It is well established by a great number of cases that school officers may enforce any rule which is reasonable and which is necessary to promote the best interests of the schools.[1] The courts are, indeed, very reluctant to declare a board regulation unreasonable. They will never substitute their own discretion for that of the school authorities; the enforcement of a rule will never be enjoined because, in the opinion of the court, the rule is unwise or inexpedient; a rule will not be set aside unless it clearly appears to be unreasonable.[2] A

[1] *Fertich* v. *Michener*, 111 Ind. 472, 11 N.E. 605, 60 Am. Rep. 709; *Flory* v. *Smith*, 145 Va. 164, 134 S.E. 360; *State* v. *District Board of School District No. 1*, 135 Wis. 619, 116 N.W. 232; *Pugsley* v. *Sellmeyer*, 158 Ark. 247, 250 S.W. 538, 30 A.L.R. 1212; *Wilson* v. *Board of Education*, 233 Ill. 464, 15 L.R.A. (N.S.) 1136, 84 N.E. 697, 13 Ann. Cas. 330; *Thompson* v. *Beaver*, 63 Ill. 353; *Spiller* v. *Woburn*, 12 Allen (Mass.) 127.

[2] *Pugsley* v. *Sellmeyer*, 158 Ark. 247, 250 S.W. 538, 30 A.L.R. 1212; *State* v. *Burton*, 45 Wis. 150, 30 Am. Rep. 706; *Wilson* v. *Board of Education*, 233 Ill. 464, 15 L.R.A. (N.S.) 1136, 84 N.E. 697, 13 Ann. Cas. 330; *State* v. *District Board of School District No. 1*, 135 Wis. 619, 116 N.W. 232; *King* v. *Jefferson City School Board*, 71 Mo. 628.

board regulation is not reasonable or unreasonable per se; its reasonableness is determined by the circumstances of each particular case. A rule which is reasonable in a warm climate may be unreasonable in a cold climate; a rule may be reasonable when applied to a boy of sixteen but unreasonable when applied to a girl of six.

If boards of education fail to formulate rules and regulations, superintendents, principals, and teachers may make and enforce such reasonable rules and regulations as may be necessary in the administration of the schools.[1] Inasmuch as the teacher stands *in loco parentis*, he may enforce obedience to any reasonable and lawful commands.[2]

Neither school boards nor teachers, however, may enforce rules governing the conduct of pupils with respect to matters over which the board has no jurisdiction. That is, the conduct which the board undertakes to regulate must have some direct relation to the management and well-being of the school. In a Wisconsin case,[3] for example, a pupil was expelled from school for refusing to obey a rule which required each pupil of sufficient bodily strength, upon returning from the playground at recess, to bring in a stick of wood fitted for use in the stove. In holding that the rule could not be enforced, the court pointed out that the school board must confine its rules to matters which concern the education of pupils or discipline in the school and that it could not, according to its fancy or humor, enforce rules on all manner of subjects. In the words of the court:

> Any rule or regulation which has for its object anything outside of the instruction of the pupil—the order requisite for instruction—is beyond the province of the board of education to adopt. The requirement that school children should bring up wood, when not by way of punishment, has nothing to do with the education of the child. It is nothing but manual labor, pure and simple, and has no relation to mental development.

Where an attempt is made to enforce an unreasonable rule or a rule which is *ultra vires*, recourse may be had to the courts on the part of the persons aggrieved. The school officers are not themselves

[1] *State* v. *Randall*, 79 Mo. App. 226; *Deskins* v. *Gose*, 85 Mo. 485; *Patterson* v. *Nutter*, 78 Me. 509, 7 Atl. 273, 57 Am. Rep. 818; *Sheehan* v. *Sturges*, 53 Conn. 481, 2 Atl. 841.

[2] *State* v. *Burton*, 45 Wis. 150, 30 Am. Rep. 706.

[3] *State* v. *Board of Education*, 63 Wis. 234, 23 N.W. 1002, 53 Am. Rep. 282.

the final judges of what constitutes a reasonable regulation.[1] Moreover, whether a rule is or is not reasonable is a matter of law to be determined by the court and not a matter of fact to be determined by the jury. On this point the Supreme Court of Iowa said:

> It was certainly never the intention of the legislature to confer upon school boards, superintendents of schools, or other officers discharging quasi-judicial functions, exclusive authority to decide questions pertaining to their jurisdiction and the extent of their power. All such questions may be determined by the courts of the state.[2]

A court will, therefore, enjoin the enforcement of an unreasonable rule; or, if a pupil has been excluded from school because of disobedience of an unreasonable rule, a court will issue a writ of mandamus requiring reinstatement of the pupil.

The courts will determine whether a rule governing pupil conduct is reasonable; they will not, however, review the findings of a school board with respect to facts. That is, whether a pupil has or has not been guilty of certain conduct is a matter of fact to be determined by the school authorities and will not be reviewed by the courts unless it can be shown that the school authorities have acted maliciously or in bad faith.[3] In an Illinois case,[4] as an illustration, a pupil was expelled from school because he had joined a secret society in violation of a rule of the board of education. The pupil contended that he was not a member of the society and had not, therefore, violated the rule. The court refused to review the finding of the board as to the facts and said:

> The power to determine what constitutes disobedience or misconduct lies within the board of education, and under no circumstances except where fraud, corruption, oppression, or gross injustice is palpably shown, is a court of law authorized to review the decision of the board of education, and to substitute its judgment for that of the board. . . . .
>
> The power of the board to exercise its honest and reasonable discretion in such cases without the interference of the courts is well settled.

[1] *Pugsley* v. *Sellmeyer*, 158 Ark. 247, 250 S.W. 538, 30 A.L.R. 1212; *Thompson* v. *Beaver*, 63 Ill. 353.

[2] *Perkins* v. *Independent School District of West Des Moines*, 56 Ia. 476, 9 N.W. 356.

[3] *Watson* v. *City of Cambridge*, 157 Mass. 561, 32 N.E. 864; *Hodgkins* v. *Rockport*, 105 Mass. 475; *Board of Education* v. *Booth*, 110 Ky. 807, 62 S.W. 872, 53 L.R.A. 787; *Smith* v. *Board of Education*, 182 Ill. App. 342.

[4] *Smith* v. *Board of Education*, 182 Ill. App. 342.

Similarly, in a Kentucky case[1] a pupil was expelled for writing an insulting composition. The court refused to review the facts with the view of determining the guilt or innocence of the pupil. An excerpt from the opinion of the court follows.

> It necessarily follows that those in charge of said school must be allowed to judge of and determine as to the propriety of expelling scholars therefrom, and it is manifest that those in charge of the school are better qualified to judge of and determine as to what offenses justify expulsion than the courts can ordinarily be. . . . . Our conclusion is that those in charge of such schools have a right to formulate such necessary rules as, in their judgment, will best promote the public good; and, if such rules are violated by any pupil, the right to expel such pupil exists and may be exercised by the proper school authorities; and the question as to the guilt or innocence of the accused cannot be reviewed by the courts unless it appears that such pupil was expelled arbitrarily or maliciously. We do not feel called upon to determine in this case whether the plaintiff was guilty of the offense for which it seems she was expelled from school. It may be that she did not mean to insult her teacher. That question was determined by the superintendent, and his action ratified by the board of education, and we do not think we have the authority to weigh and determine the evidence in respect thereto. We are not of the opinion that the evidence in this case tends to show that the teacher, superintendent, or board of education acted maliciously or unfairly in the matter under consideration.

RULES RESTRICTING ADMISSION TO SCHOOL

Although the law may provide that all the children of a state have the right to attend the public schools, it is not intended that this right shall be unrestricted. A board of education may enforce reasonable regulations governing the time pupils may enter the public schools. In an Illinois case,[2] for example, an attempt was made to enforce a regulation to the effect that pupils arriving at school age during the school year would be admitted to school only during the first month of the autumn and spring terms, beginning on or about the first of September and April, respectively. The court held that the board of education had the authority "to adopt reasonable rules and regulations, in regard to the admission of persons over six years of age, which may operate to prevent such persons from entering school immediately after arriving at the age of six years." However, the court regarded the rule in question as unreasonable and said:

[1] *Board of Education* v. *Booth*, 110 Ky. 807, 62 S.W. 872, 53 L.R.A. 787.

[2] *Board of Education* v. *Bolton*, 85 Ill. App. 92.

We are of opinion that the rule which caused appellee's child, who arrived at school age only thirty-one days after the fall term commenced, to lose the benefits of the free school, not only during the remaining months of that term, but also during the whole of the following winter term, was not a reasonable one or calculated to promote the objects of the law.

In a somewhat similar case[1] decided by the Supreme Judicial Court of Massachusetts a rule provided that pupils under seven years of age entitled but not required to attend school might enter school within three or four weeks after the beginning of the autumn term. Such pupils seeking to enter school thereafter would be denied admission unless they were qualified to enter classes already in existence. In holding that the rule was reasonable, the court used the following language:

Children under seven years of age, although allowed to attend the public schools, are not required to attend. Grading is a permitted if not an essential feature of the public-school system. The introduction late in the school year of a very young scholar not qualified to enter the existing classes would tend to impair the efficiency of the school, and so to prevent the other scholars from attaining such advancement in learning and in training as would enable them to proceed with their education in due course. The right given to every child . . . . to attend the public schools is not unqualified, but is "subject to such reasonable regulations as to the numbers and qualifications of pupils to be admitted to the respective schools, and as to other school matters, as the school committee shall from time to time prescribe."

The Supreme Court of Kansas has held to be reasonable a rule which required all persons who were not graduates of a public elementary school to pass an entrance examination as a condition of admission to high school.[2] In South Dakota a school board has authority to enforce a rule which excludes from school pupils who refuse to submit to a physical examination by a licensed physician.[3]

AUTHORITY TO REQUIRE PUPILS TO PAY FOR INJURY TO SCHOOL PROPERTY

The courts are in agreement in holding that boards of education may not require pupils to pay for injury to school property if the

[1] *Alvord* v. *Inhabitants of Chester*, 180 Mass. 20, 61 N.E. 263.

[2] *Creyhon* v. *Board of Education*, 99 Kan. 824, 163 Pac. 145, L.R.A. 1917C 993.

[3] *Streich* v. *Board of Education*, 34 S. D. 169, 147 N.W. 779, Ann. Cas. 1917A 760, L.R.A. 1915A 632.

injury grows out of acts of neglect or carelessness. In a Michigan case[1] a school board attempted to enforce a rule to the effect that any pupil who should deface or injure school property should be suspended from school until full satisfaction was made. While playing, a pupil negligently and carelessly broke a window in the schoolhouse. The father of the pupil refused to pay for the window, and the child was suspended from school. In holding that the rule was unreasonable, the court pointed out that a pupil can be expelled only for wilful or malicious acts. Moreover, the practical operation of such a rule might, in some instances, have the effect of depriving poor children of the right of a common-school education.

The Supreme Court of Iowa has placed the unreasonableness of such a rule upon even broader considerations. It has said:

> The state does not deprive its citizens of their property or their liberty, or of any rights, except as a punishment for a crime. It would be very harsh and obviously unjust to deprive a child of education for the reason that through accident and without intention of wrong he destroyed property of the school district. Doubtless a child can be expelled from school as a punishment for breach of discipline or for offenses against good morals, but not for innocent acts.
>
> In this case the plaintiff was expelled, not because he broke the glass, but because he did not pay the damage sustained by the breaking. His default in this respect was no breach of good order or good morals. The rule requiring him to make payment is not intended to secure good order but to enforce an obligation to pay a sum of money. We are clearly of the opinion that the directors have no authority to promulgate or enforce such a rule.[2]

HEALTH REGULATIONS OF SCHOOL BOARDS

Since attendance at the public schools is a privilege extended by the state, the state may, through properly constituted authorities, exclude from school all pupils whose presence would jeopardize the health of other pupils.[3] Thus, pupils who are merely suspected of being affected with a contagious disease may be excluded from school. In a North Dakota case,[4] for example, a survey made by the public-health service of the federal government revealed that in

[1] *Holman* v. *School Trustees of Avon*, 77 Mich. 605, 43 N.W. 996, 6 L.R.A. 534.

[2] *Perkins* v. *Independent School District of West Des Moines*, 56 Ia. 476, 9 N.W. 356.

[3] *Stone* v. *Probst*, 165 Minn. 361, 206 N.W. 642; *Martin* v. *Craig*, 42 N. D. 213, 173 N.W. 787; *Carr* v. *Inhabitants of Dighton*, 229 Mass. 304, 118 N.E. 525.

[4] *Martin* v. *Craig*, 42 N. D. 213, 173 N.W. 787.

a certain county there were 120 positive cases and 350 suspected cases of trachoma. The county board of health issued an order excluding the suspected cases from school. It was said by the court, in sustaining the action of the health authorities:

> The order of exclusion in the instant case cannot be said to be unreasonable. It only excludes those whose cases are positive and suspected, who are not at the time under treatment. The seriousness of the disease and its communicable character afford ample foundation for such an order; and, even conceding that it may be doubted in the instant case whether the children in question are affected, the doubt is one that must be resolved in favor of the authorities charged with the serious responsibility of preventing the spread of the disease. This is a case where mandamus does not issue as a matter of right but where it will only issue in the exercise of a judicial discretion, and this discretion should not be exercised in a way that might result in needlessly exposing healthful children to a disease as serious as trachoma.

Customarily, boards of education, under their general powers, have authority to enforce regulations whereby pupils who are a menace to the health of their associates may be excluded from school. A case in point is that of *Stone* v. *Probst*.[1] The charter of the city of Minneapolis provided that the board of education should have "the entire control and management of all the common schools within the city . . . . and make rules and regulations for the government of schools." Pursuant to authority thus conferred, the board of education enacted rules whereby principals and teachers were required to "be on the alert to discover suspected contagious diseases, filth, or vermin, and physical and mental defects." A child suspected of being infected with a contagious disease was to be excluded from school until an examination revealed the absence of infection. A pupil who was ill with a throat infection was excluded from school until she should furnish the school authorities with a negative report from a throat culture submitted to the division of public health of the city. "In addition thereto she was also required to present a certificate from a physician as to the condition of her throat, or submit to a physical examination by the regularly employed school physician or nurses." The pupil, who was a member of the Christian Science church, refused to comply with the demand of the board. She contended that the rules of the board were illegal in

[1] *Stone* v. *Probst*, 165 Minn. 361, 206 N.W. 642.

that they violated a constitutional provision which prohibited the legislature from delegating legislative powers. In other words, the rules of the board were not merely administrative regulations but legislative enactments. It was further contended that the board of education had no authority to make the rules in question because the matter of public health had been delegated to the board of public welfare. Finally, the rules were attacked as being arbitrary and unreasonable. The court overruled all these contentions and sustained the rules in an opinion from which the following quotation is taken.

> To have the entire control and management, with power to make rules and regulations, means almost every power necessary or essential for the proper administration of such schools. It must be conceded by all that one of the primary duties of the board is to protect the health of the many children in their charge. Persons differ only in how this is to be accomplished. Efforts for prevention do much to avoid an epidemic. The demand upon the board for vigilance in this respect is imperative. All authority exercised in the protection of the public health is to be liberally construed. We hold that the language of the charter by fair implication confers upon the board of education the power to make and enforce the rules involved. In fact, it could not effectually carry out the purposes for which it exists without such power. . . . .
>
> It is contended here that the school board by its rules has assumed to enact a law and that it is without legislative authority. Of course, the legislative body cannot be permitted to relieve itself of this power by delegating it to another body. But the constitutional inhibition cannot be extended so as to prevent the grant of legislative authority to administrative boards to adopt rules to carry out a particular purpose. It cannot be claimed that every grant of power to administrative boards involving the exercise of discretion in judgment must be considered as a delegation of legislative authority. There are many matters relating to methods or details which may be, by the legislative body, referred to a particular administrative board. Such matters fall within the domain of the right of the legislative body to authorize an administrative board to make rules or regulations in aid of the successful execution of some general statutory provision or to enable it to carry out the purpose of its existence. These rules come within this class and are administrative provisions. They are also the result of the valid exercise of the police power invested in the board of education by virtue of the language of the charter.

The court concluded its opinion by pointing out that the rules of the board were reasonable and should not be disturbed by the courts.

As has been pointed out in another connection, a school board may refuse to admit to school pupils who will not submit to a phys-

ical examination by a licensed physician.[1] A school board may also spend public funds for purposes of health inspection,[2] although it may not spend such funds for purposes of remedial treatment.[3]

AUTHORITY OF SCHOOL BOARDS WITH RESPECT TO VACCINATION

In the exercise of its police power a state may require that all persons be vaccinated. A statute of Massachusetts, for example, required the inhabitants of a city or town to be vaccinated whenever in the opinion of the board of health vaccination was necessary to safeguard the public health and the public safety. The constitutionality of the statute was challenged before the Supreme Court of the United States. In the opinion of that court, the act in question was not unreasonable, arbitrary, nor oppressive. Neither did it deprive any person of liberty guaranteed by the federal constitution.[4] Similarly, the state may authorize or require boards of education to make vaccination a condition of school attendance regardless of the existence or nonexistence of smallpox in the school district. The constitutionality of statutes which authorize or require the exclusion from public schools of all unvaccinated pupils has been tested in a great number of cases, but the courts have, without exception, sustained such legislation as a valid exercise of the police power of the state.[5] Such legislation is not an arbitrary and unreasonable re-

[1] *Streich* v. *Board of Education*, 34 S. D. 169, 147 N.W. 779, Ann. Cas. 1917A 760, L.R.A. 1915A 632.

[2] *City of Dallas* v. *Mosely*, 286 S.W. (Tex.) 497; *State* v. *Brown*, 112 Minn. 370, 128 N.W. 294; *Hallet* v. *Post Printing & Publishing Company*, 68 Colo. 573, 192 Pac. 658, 12 A.L.R. 919.

[3] *McGilvra* v. *Seattle School District No. 1*, 113 Wash. 619, 194 Pac. 817, 12 A.L.R. 913.

[4] *Jacobson* v. *Commonwealth of Massachusetts*, 197 U. S. 11, 25 S. Ct. 358, 49 L. Ed. 643, 3 Ann. Cas. 765.

[5] *Bissell* v. *Davison*, 65 Conn. 183, 32 Atl. 348, 29 L.R.A. 251; *Viemeister* v. *White*, 179 N. Y. 235, 72 N.E. 97, 70 L.R.A. 796, 103 Am. St. Rep. 859; *French* v. *Davidson*, 143 Cal. 638, 77 Pac. 663; *Stull* v. *Reber*, 215 Pa. 156, 64 Atl. 419; *Abeel* v. *Clark*, 84 Cal. 226, 24 Pac. 383; *State* v. *Shorrock*, 55 Wash. 208, 104 Pac. 214; *Field* v. *Robinson*, 198 Pa. 638, 48 Atl. 873; *State* v. *Board of Education*, 76 Ohio St. 297, 81 N.E. 568, 10 Ann. Cas. 879; *State Board of Health* v. *Watsonville School District*, 13 Cal. App. 514, 110 Pac. 137; *People* v. *Ekerold*, 211 N. Y. 386, 105 N.E. 670, L.R.A. 1915D 223; *Barber* v. *School Board of Rochester*, 135 Atl. (N. H.) 159; *Zucht* v. *King*, 225 S.W. (Tex.) 267; *Zucht* v. *King*, 43 S. Ct. Rep. 24, 260 U. S. 174, 67 L. Ed. 194.

straint upon personal liberty;[1] it does not constitute the delegation of legislative authority;[2] it does not interfere with rights of conscience;[3] and it is not special nor class legislation although it affects only one class of persons, namely, school pupils.[4]

The reasoning of the courts is well illustrated by an opinion rendered by the Supreme Court of Errors of Connecticut.[5] A statute provided that the school visitors of any town might require that every child be vaccinated before being permitted to attend the public schools. The statute was attacked upon the ground that it violated a provision of the state constitution which guaranteed equality of rights. It was also contended that the act violated that provision of the Fourteenth Amendment which guarantees to all the equal protection of the law. In holding that the act violated neither the state nor the federal constitution, the court said:

> The duty of providing for the education of the children within its limits, through the support and maintenance of public schools, has always been regarded in this state in the light of a governmental duty resting upon the sovereign state. It is a duty not imposed by constitutional provision, but has always been assumed by the state, not only because the education of youth is a matter of great public utility, but also and chiefly because it is one of great public necessity for the protection and welfare of the state itself. . . . . This [the right of school attendance] is a privilege or advantage, rather than a right in the strict technical sense of the term. This privilege is granted and is to be enjoyed upon such terms and under such reasonable conditions and restrictions as the law-making power, within constitutional limits, may see fit to impose; and, within those limits, the question what terms, conditions, and restrictions will best subserve the ends sought in the establishment and maintenance of public schools is a question solely for the legislature and not for the courts. The statute in question authorizes the committee to impose vaccination as one of those conditions. It does not authorize or compel compulsory vaccination; it simply requires vaccination as one of the conditions of the privilege of attending public school. . . . .

[1] *Viemeister* v. *White*, 179 N. Y. 235, 72 N.E. 97, 70 L.R.A. 796, 103 Am. St. Rep. 859; *Abeel* v. *Clark*, 84 Cal. 226, 24 Pac. 383; *Cram* v. *School Board of Manchester*, 136 Atl. (N. H.) 263.

[2] *Zucht* v. *King*, 225 S.W. (Tex.) 267; *Blue* v. *Beach*, 155 Ind. 121, 56 N.E. 89, 50 L.R.A. 64; *State* v. *Board of Education*, 21 Utah 401, 60 Pac. 1013; *Hagler* v. *Larner*, 284 Ill. 547, 120 N.E. 575.

[3] *Staffel* v. *San Antonio School Board*, 201 S.W. (Tex.) 413; *Commonwealth* v. *Green*, 168 N.E. (Mass.) 101.

[4] *French* v. *Davidson*, 143 Cal. 638, 77 Pac. 663.

[5] *Bissell* v. *Davison*, 65 Conn. 183, 32 Atl. 348, 29 L.R.A. 251.

If vaccination is a preventive of smallpox, as claimed by what appears to be the great majority of the medical profession, the requirement would seem to be a reasonable one. Public opinion also upon this question, as crystallized into law, seems to regard it as such a preventive. It is a question, however, about which medical men differ greatly and upon which public opinion at the present day may be said to be divided. However this may be, we think that in a case like the one at bar, touching the terms and conditions of attendance at the public schools, the question of the reasonableness, in this sense, of such a requirement, is one exclusively for the legislature. . . . .

Nor in any proper sense can the statute be said to deprive the plaintiff of any right without due process of law or to deny to him the equal protection of the law.

In the absence of statutory authority, the right of a school board to exclude from school pupils who have not been vaccinated depends, as a rule, upon the existence or nonexistence of smallpox in the community. The courts all agree that, when an epidemic of smallpox exists or is threatened, boards of education may, under the general authority conferred upon them to govern the schools, make vaccination a condition of school attendance.[1] The rule has been stated as follows by the Court of Civil Appeals of Texas.

The power of local bodies to require the vaccination of school children as a condition to their admission to public schools, in the absence of express authority, is dependent upon the conditions existing in the community with reference to smallpox. When an epidemic exists or is imminent, there can be no doubt that the power may be exercised. It has also been held that such regulations may be adopted and enforced when smallpox exists in a community, and by some courts the expression is used that such regulations may be adopted when an epidemic is reasonably apprehended. In this case it was found that no epidemic existed or was imminent but that the existing conditions with reference to smallpox constituted a menace to the public health. We conclude from our investigation of the authorities that it is not necessary for an epidemic to exist or be imminent in order for the school board to be justified in adopting and enforcing the regulation complained of because, if the conditions are such that they constitute a menace to the public health, it cannot be said that the board's action was unreasonable and that the want of necessity for the measures has been shown to be "clear, manifest, and undoubted." If existing conditions constitute a menace to the public health, an epidemic is threatened, and it cannot

[1] *Auten* v. *Board of Directors*, 83 Ark. 431, 104 S.W. 130; *Duffield* v. *School District of City of Williamsport*, 162 Pa. 476, 29 Atl. 742, 25 L.R.A. 152; *Staffel* v. *San Antonio School Board*, 201 S.W. (Tex.) 413; *Hagler* v. *Larner*, 284 Ill. 547, 120 N.E. 575; *Glover* v. *Board of Education*, 14 S. D. 139, 84 N.W. 761; *Zucht* v. *San Antonio School Board*, 170 S.W. (Tex.) 840.

be said that it did not reasonably appear to the board to be necessary to adopt the regulation.[1]

While the courts will not hold that vaccination is a preventive of smallpox, they will hold that a board of education has the right to act upon the common belief that it is such a preventive.[2] In a Pennsylvania case,[3] for example, the court refused to issue a writ of mandamus to compel the school board to admit unvaccinated pupils at a time when smallpox existed in the district and in a number of nearby towns. An excerpt from the opinion of the court follows.

Is the regulation now under consideration a reasonable one? That is to be judged of in the first instance by the city authorities and the school board. It is only in the case of an abuse of discretionary powers that the court will undertake to supervise official discretion. Vaccination may be, or may not be, a preventive of smallpox. That is a question about which medical men differ and which the law affords no means of determining in a summary manner. A decided majority of the medical profession believe in its efficacy. . . . . In the present state of medical knowledge and public opinion upon this subject it would be impossible for a court to deny that there is reason for believing in the importance of vaccination as a means of protection from the scourge of smallpox. The question is not one of science in a case like the present. We are not required to determine judicially whether the public belief in the efficacy of vaccination is absolutely right or not. We are to consider what is reasonable in view of the present state of medical knowledge and the concurring opinions of the various boards and offices charged with the care of the public health. The answers of the city and the school board show the belief of the proper authorities to be that a proper regard for the public health and for the children of the public schools requires the adoption of the regulation complained of. They are doing, in the utmost good faith, what they believe it is their duty to do; and though the plaintiff might be able to demonstrate by the highest scientific tests that they are mistaken in this respect, that would not be enough. It is not an error in judgment, or a mistake upon some abstruse question of medical science, but an abuse of discretionary power, that justifies the courts in interfering with the conduct of the school board or setting aside its action.

A pupil cannot defeat the operation of a rule requiring vaccination on the ground that it violates rights of conscience. In so holding, the court in a Texas case[4] pointed out that "the control of the

[1] *Zucht* v. *San Antonio School Board*, 170 S.W. (Tex.) 840.

[2] *Auten* v. *Board of Directors*, 83 Ark. 431, 104 S.W. 130.

[3] *Duffield* v. *School District of City of Williamsport*, 162 Pa. 476, 29 Atl. 742, 25 L.R.A. 152.

[4] *Staffel* v. *San Antonio School Board*, 201 S.W. (Tex.) 413.

schools in San Antonio is given by law to the San Antonio board of education, and not to individual parents, no matter how correct their consciences, convictions, faith, and religious beliefs may be."

According to the great weight of authority, a school board cannot, unless authorized to do so by statute, make vaccination a condition of school attendance in the absence of an actual or imminent epidemic of smallpox.[1] The courts reason that boards of education, being creatures of the legislature, can exercise only such powers as are expressly or impliedly granted. Authority to enforce a general, continuing rule requiring vaccination as a condition of school attendance, regardless of the existence or nonexistence of smallpox, is a power which cannot be implied nor inferred. Thus, it was said by the Supreme Court of Michigan:

> It is not a question as to what the legislature might do, under the police power, about requiring vaccination as a prerequisite to attending school; nor is it a question of whether the legislature could confer this power upon the school board. The board of education is a creature of the statute. It possesses only such powers as the statute gives it. The legislature has said who may and should attend the public schools. It nowhere undertakes to confer the power upon the school board to change these conditions by passing a general, continuing rule excluding children from the public schools until they comply with conditions not imposed upon them by the legislative branch of the government. In what I have said I do not mean to intimate that during the prevalence of diphtheria or smallpox, or any other epidemic of contagious disease, in a school district, the board may not, under its general powers, temporarily close these schools or temporarily say who shall be excluded from the schools until the epidemic has passed; but what I do say is that the legislature has not undertaken to give them the power, when no epidemic of contagious disease exists or is imminent in the district, to pass a general, continuing rule which would have the effect of a general law excluding all pupils who will not submit to vaccination.[2]

However, some courts hold that a school board may, without specific statutory authority and in the absence of smallpox, exclude from the public schools pupils who do not present a certificate of

[1] *Potts* v. *Breen*, 167 Ill. 67, 47 N.E. 81, 39 L.R.A. 152; *Mathews* v. *Kalamazoo Board of Education*, 127 Mich. 530, 86 N.W. 1036, 54 L.R.A. 736; *People* v. *Board of Education*, 234 Ill. 422, 84 N.E. 1046, 17 L.R.A. (N.S.) 709, Ann. Cas. 943; *Burroughs* v. *Mortenson*, 312 Ill. 163, 143 N.E. 457.

[2] *Mathews* v. *Kalamazoo Board of Education*, 127 Mich. 530, 86 N.W. 1036, 54 L.R.A. 736.

vaccination.[1] In a North Carolina case,[2] during an epidemic of smallpox in the town of Durham, the school board passed a rule excluding from school pupils who had not been vaccinated. Action was brought to require the admission of an unvaccinated child. At the time the court rendered its decision there was, it seems, no danger of the spread of smallpox. Nevertheless, the court sustained the rule in language intimating that the rule would have been upheld even in the absence of smallpox. The court said:

> The plaintiff relies upon *Potts* v. *Breen*, 167 Ill. 67, 47 N.E. 81, 39 L.R.A. 152, 59 Am. St. Rep. 262, that, in the absence of express legislative power, a resolution requiring vaccination as a prerequisite to attending schools is unreasonable, when smallpox does not exist in the community, and there is reasonable ground to apprehend its appearance. We are not inclined to follow that authority. With the present rapid means of intercommunication, smallpox may make its appearance in any community at any moment without any notice given beforehand, and incalculable havoc be made, especially among the school children, which cannot be remedied by a subsequent order excluding the non-vaccinated. "An ounce of prevention is worth a pound of cure."

[1] *Hutchins* v. *School Committee of the Town of Durham*, 137 N. C. 68, 49 S.E. 46; *In the Matter of Rebenack*, 62 Mo. App. 8.

[2] *Hutchins* v. *School Committee of the Town of Durham*, 137 N. C. 68, 49 S.E. 46.

[*To be continued*]

DOES HEALTH INSTRUCTION PAY?

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The importance of health education is generally conceded, as is evidenced by the inclusion of health as one of the major objectives of education. Since the World War a new and stronger emphasis upon health instruction and hygiene has been recognized as desirable. Recently Terman and Almack indicated that an actual increase in emphasis on hygiene has followed the period of neglect during the World War.[1]

Practices in the schools with regard to health instruction seem, however, to be irregular. At least, the writers have found great differences in the time devoted to health instruction, in the preparation of the teachers, and in the completeness of the courses of study. Miss Strang's investigation revealed considerable disagreement in the content of the courses of study.[2] It is recognized that a great deal of the teaching of health is still incidental. Moore recently stated, "The safest criterion for assuming that serious thought has been given to the evaluation and methods of presentation of health facts is to find health education appearing in the daily program on an equal basis with reading, arithmetic, and the mother-tongue."[3] How general health instruction is we do not know.

How effective health instruction is in bringing about changed

[1] Lewis M. Terman and John C. Almack, *The Hygiene of the School Child*, p. xiv. Boston: Houghton Mifflin Co., 1929 (revised).

[2] Ruth Strang, *Subject Matter in Health Education*, p. 101. Teachers College Contributions to Education, No. 222. New York: Teachers College, Columbia University, 1926.

[3] J. G. Moore, in discussion of "Methods of Presenting Health Facts to Elementary School Children," *School Health Programs from Many Lands*, p. 77. A Report of the Health Section of the World Federation of Education Associations Held at Toronto, Canada, August 8–12, 1927. New York: American Child Health Association, 1928.

conditions of health seems also to be in doubt. Rogers cites a study made by Turner which indicates that health-teaching is effective in improving health status.[1] Children who received health education made greater gains in both height and weight than did a control group. The effectiveness of health instruction in adding to the health knowledge of pupils, irrespective of the effect on health itself, has not been studied to any great extent.

The study reported in this article was made to compare the health knowledge of third- and fourth-grade pupils in three schools. In

TABLE I

COMPARISON OF THREE SCHOOLS STUDIED

	School A	School B	School C
Population of town	10,000	2,000	Rural
Average intelligence quotient of pupils studied	105	101	98
Preparation of teacher for teaching health	Well trained	Some training	None
Amount of time spent in health study each week	150 minutes	50 minutes	Irregular
Course of study in use	A planned course	A partially planned course	None
Was there a difference in the material for each grade?	Yes	No	No
Were health records of the pupils kept?	Yes	No	No

School A considerable emphasis was placed on health instruction; in School B, very much less emphasis; and in School C, practically none. In addition to this comparison some evidence was secured bearing on the relation between health knowledge and health. Data on essential points of comparison in the three schools are given in Table I.

In this study health is considered in terms of the medical inspection card used in School A, the various points on the card having been evaluated with the assistance of a physician. The term "health knowledge" means health knowledge indicated by the scores on a health-knowledge test.

A health-knowledge test was given to the pupils in Grades III

[1] James Frederick Rogers, *School Health Work 1926–1928*. United States Bureau of Education Bulletin No. 8, 1929.

and IV in each of the three schools. This test was modeled after the Gates-Strang Health-Knowledge Test and was planned to cover the material studied by the pupils. The test consisted of fifty-four multiple-choice items. It emphasized items generally considered to be most important and vital to healthful living. The health teacher in School A and a physician helped to select the items. An attempt was made to keep the wording of the test as simple as possible so that the pupils would have no difficulty in understanding the questions. It was necessary to include some technical words when no substitutes existed, but the number of such words was kept as low as possible. Several teachers in the grades assisted in criticizing the wording of the test before it was used. The following sample items from the test will indicate its nature.

1. Boys and girls should sleep—
   _____ as long as their parents do
   _____ six or eight hours a day
   __×__ ten or eleven hours a day
   _____ late in the morning
2. We should brush our teeth—
   _____ once a week
   _____ twice a month
   __×__ twice a day
   _____ once a day
3. Of the following the most healthful for children is—
   _____ ginger ale
   _____ tea
   _____ coffee
   _____ soda pop
   __×__ orange juice

The validity of the test was checked by correlating the scores made on the test with the pupils' marks in health study, which had been earned before the application of the test. The correlation was $.95 \pm .07$. Tests made of items paralleling the "actual flow of instruction"[1] are usually assumed to be valid measures of the knowledge acquired from the instruction.

The reliability of the test was ascertained by correlating the odd- and even-numbered items. The reliability coefficient thus found was

[1] G. M. Ruch, *The Objective or New-Type Examination*, p. 40. Chicago: Scott, Foresman & Co., 1929.

.93 ± .09. Use of the Spearman-Brown formula[1] indicated that, if the test had been five times as long, the coefficient would have been .986.

The intelligence of the pupils studied was tested by the National Intelligence Tests, Scale A. The differences in the average mental ages and intelligence quotients of these groups were not large enough to explain the great differences between their scores on the health-knowledge tests.

It was impossible to secure a measure of health for the pupils in Schools B and C. In the city in which School A is located, the physicians of the city examine all school children each autumn, and their findings are entered on a special record card. While the information was not so adequate as it might have been, it afforded some measure of the health of the children. This health-record card indicated among other things whether or not a child had had certain of the more common diseases, such as measles, typhoid, or diphtheria; the vaccination record; presence or absence of anemia, skin diseases, and scalp diseases; condition of cervical glands, of nose and throat, tonsils, teeth, eyes, ears, and feet.

A perfect health-record card was given a credit of one hundred points. Only one point was deducted for each of the contagious diseases listed on the card which a pupil had had, since having had the diseases was not considered to be a sign of poor health. For each of the defects listed, most of which are preventable and curable, five points were deducted from the score. One point was deducted for every pound over five that the pupil varied from normal. Two points were subtracted for each dental cavity, and five points were deducted if the teeth needed cleaning or if the mouth showed lack of proper care.

The scholastic average for each pupil for the year and also the mark in health study were obtained from the school records.

In Table II are presented the frequency distributions of the scores made on the health-knowledge test by the pupils in the three schools. Table III gives the mean score for each of the schools, the differences between the mean scores for Schools A and B and for Schools A and C, and the reliability of these differences. Tables II and III

[1] Henry E. Garrett, *Statistics in Psychology and Education*, p. 269. New York: Longmans, Green & Co., 1926.

indicate that the scores on the health-knowledge test are definitely favorable to School A. The ratio between the difference and the

TABLE II

DISTRIBUTIONS OF THIRD- AND FOURTH-GRADE PUPILS IN SCHOOLS A, B, AND C ACCORDING TO SCORES MADE ON HEALTH-KNOWLEDGE TEST

Score	School A	School B	School C
50–54	1	0	0
45–49	9	0	0
40–44	15	1	0
35–39	23	2	1
30–34	19	8	3
25–29	10	17	5
20–24	6	13	6
15–19	2	11	7
10–14	1	4	2
Total	86	56	24
Mean	35.53	24.65	23.13
Standard deviation	7.93	6.65	6.23

TABLE III

DIFFERENCES BETWEEN MEAN SCORES ON HEALTH-KNOWLEDGE TEST OF SCHOOLS A AND B AND OF SCHOOLS A AND C AND RELIABILITY OF THE DIFFERENCES

School	Mean Score	Standard Deviation	Standard Deviation of the Difference	Difference Divided by Standard Deviation of the Difference	Chances in 100 that Difference Is a True Difference
School A	35.53	7.93	.....	.....	.....
School B	24.65	6.65	.....	.....	.....
Difference	10.88	.....	1.23	8.85	100
School A	35.53	7.93	.....	.....	.....
School C	23.13	6.23	.....	.....	.....
Difference	12.40	.....	1.53	8.10	100

standard deviation of the difference is so large that the difference can be considered reliable. Apparently, the better course of study, or the better-trained teachers, or the emphasis given health instruction, or a combination of these factors is favorable to the acquisition of a knowledge of health.

In order to control the factors of chronological age, mental age,

and intelligence quotient, eighteen third-grade pupils and sixteen fourth-grade pupils from School A were paired with equal numbers from School B with respect to each of these variables. The mean chronological age, intelligence quotient, and mental age of

TABLE IV

MEAN CHRONOLOGICAL AGE, INTELLIGENCE QUOTIENT, AND MENTAL AGE OF PAIRED GROUPS OF THIRD- AND FOURTH-GRADE PUPILS IN SCHOOLS A AND B

	Chronological Age	Intelligence Quotient	Mental Age
Third grade:			
School A	106.2	100.0	105.7
School B	105.6	99.9	105.2
Fourth grade:			
School A	119.8	103.1	122.6
School B	119.7	103.1	123.0

TABLE V

DIFFERENCES BETWEEN MEAN SCORES MADE BY EQUATED GROUPS ON HEALTH-KNOWLEDGE TEST AND RELIABILITY OF THE DIFFERENCES

Group	Mean Score	Standard Deviation	Standard Deviation of the Difference	Difference Divided by Standard Deviation of the Difference	Chances in 100 that Difference Is a True Difference
Third grade:					
School A	33.55	5.20	.....	.....	.....
School B	23.55	4.35	.....	.....	.....
Difference	10.00	.....	1.59	6.29	100
Fourth grade:					
School A	35.00	8.65	.....	.....	.....
School B	27.25	6.85	.....	.....	.....
Difference	7.75	.....	2.75	2.82	99.74

each of these two groups are shown in Table IV. Table V presents the mean scores made on the health-knowledge test by these equated groups, the differences between the means, and the reliability of the differences. Tables IV and V indicate that pupils of equal ability in School A demonstrated a real superiority in health knowledge over those in School B.

These data indicate only that health-teaching is effective in in-

creasing health knowledge as measured by this test. They do not show that the increased health knowledge was effective in promoting better health. If Turner's results[1] can be considered typical of all schools, the better health knowledge of pupils in School A would be decidedly worth while. Since health records permitting differential scoring were not available for Schools B and C, the only indication of the relation between health knowledge and health which was obtainable was the correlation between the scores on the health-knowledge test and the health-record scores in School A. This correlation was found to be .73. The writers cannot state that this was a causal relationship. The real test would be a controlled experiment extending over a period of time. Interpretation of the data is further complicated by the fact that the correlation between intelligence quotient and health knowledge in School A was .88; between marks in health knowledge and average school marks, .85. It might be that the more intelligent pupils came from more robust families and were better students in all subjects, including health study. However, it might also be that the better health of the more intelligent is partially dependent on their knowledge of health and health habits and that the better health in turn was related to better general achievement.

These data clearly indicate that the school may be instrumental in increasing health knowledge. That it may be instrumental in affecting the status of health is at least suggested.

[1] As cited in James Frederick Rogers, *op. cit.*, p.12.

Educational Writings

REVIEWS AND BOOK NOTES

Difficulties in spelling.—There is a growing conviction that the specific-bond theory of learning has received overemphasis to the neglect of rational and other generalizing factors. Perhaps in no other subject have specific bonds been emphasized so commonly and so strongly as in the case of spelling. A recent monograph by Mendenhall[1] must be given an important place, not only in the literature dealing with the possibilities of rationalization and word-grouping in spelling, but also in the literature of the diagnosis of spelling difficulties. The author shows familiarity with the varied research relating to his problem, analyzes and evaluates related studies, and builds his own original research with the purpose of filling in what seem to him to be gaps in the data in those studies.

The various problems upon which new or additional data are presented are:

1. What types of errors occur most frequently: The addition of letters? The omission of letters? The substitution of letters? The transposition of letters?
2. Is there a particular "hard spot" in a word? What proportion of all the errors does that hard spot characterize?
3. Where in general is the hard spot in a word: In the first letter? In the second letter?
4. In what syllable of a word do most spelling errors occur? What is the comparative difficulty of successive syllables of a word?
5. What letters of the alphabet are most frequently associated with error?
6. How does the number of letters in a word affect its difficulty? The number of vowels? The number of syllables?
7. What is the function of pronunciation in helping to overcome spelling errors?
8. What are the characteristics of spelling errors from one grade to the next succeeding one?
9. What is the most effective grouping of words for spelling teaching?
10. What words should be selected for a diagnostic test in spelling? [pp. 1–2]

The data upon which the author's conclusions are based were obtained by giving from three to five hundred different words to approximately a hundred pupils at each grade level. All told, 2,300 different words were used, and 280,000 spellings were obtained. These spellings were classified in several different ways in order to give the most satisfactory answer to the ten questions listed above.

[1] James E. Mendenhall, *An Analysis of Spelling Errors:* A Study of Factors Associated with Word Difficulty. New York: Lincoln School of Teachers College, Columbia University, 1930. Pp. vi+66.

The author's conclusions are wisely and carefully limited to the data of the investigation and are succinctly stated as follows:

1. The most prominent types of errors for words are the omission of letters (37 per cent of the total) and the substitution of letters (48 per cent).

2. Although the confusion of words proves a real source of difficulty in Grade I, thereafter it is of much less significance.

3. Homonyms cause more difficulty in Grade II than in any other grade.

4. The most frequent error for a word includes approximately 32 per cent of all misspellings.

5. In general the hard spot of a word is either at the center or immediately at the right of center. Initial letters of long words are respectively no more difficult than those of short words.

6. The early syllables of a word are consistently easier to spell than the later syllables.

7. Difficulty definitely resides with particular letters of the alphabet—for example, with the vowels *e*, *a*, *i*, and *u*.

8. The length of word and the number of vowels are only slightly associated with difficulty. The presence of syllables, the position of accent, and the confusion of words bear no consistent relationship to difficulty.

9. In Grades I–VI, approximately 50 per cent of all misspellings are reasonably phonetic errors.

10. Most authorities in spelling discourage the use of methods in which words are grouped by similarity of visual, auditory, or other elements.

11. A final classification of words by types of errors shows certain common tendencies—for example, (*a*) the *omission* of the second of a double letter, of a final letter, of silent letters, of key consonants, and of central syllables; and (*b*) the *substitution* of other words for the correct ones, and of one vowel for another in the second syllable of words.

Summing the foregoing evidence it appears that the principal source of spelling difficulty rests with a few particular letters, singly or in combination, rather than with any general features of words such as length, number of vowels, ease of pronunciation, and number of syllables [pp. 53–54].

These conclusions are not greatly at variance with the conclusions of related investigations in the field of spelling. Some of the interpretations, however, are not easily accepted. A few, in fact, need to be restated in the light of available results of other investigations in this field. For example, the question whether or not attention should be called to words in which there is a concentration of error of 20 to 45 per cent should be settled, as indeed the author suggests, by direct experimentation. Such studies as that by L. S. Tireman, entitled *Value of Marking Hard Spots in Spelling* (University of Iowa Studies in Education, Volume V, Number 4), indicate that it is not profitable to call the attention of an entire class to supposed hard spots. The probable explanation for this fact cannot be discussed here.

The fact that, in general, the most difficult part of a word is either at the center or immediately to the right of the center of the word might easily be interpreted to mean that a child should look at the center of a word in learning to spell it. This interpretation is not specifically given in the monograph, but it is

hinted at. It seems much safer to call the attention of the learner to the part or parts of the word which he has misspelled in his trial test. It is true that such an error will be most frequently found at the center or at the right of the center; but, when it is found at the beginning of the word, attention must be directed there.

The conclusion that "difficulty definitely resides with particular letters of the alphabet" might well be supplemented by the statement that difficulty definitely resides with particular sounds in English spelling and especially with those sounds which are spelled in a large variety of ways, as, for example, the initial sound in "shop," which is spelled in twenty-two ways in the English language. The organization of the various letters and letter combinations associated with a given sound, instead of the author's plan of organizing the different sounds associated with the letter, seems more closely related to the actual problems faced by the speller who knows the sound of the word to be spelled, at least approximately, but does not know the letters specifically required in the conventional spelling of the word.

The suggestion that "mispronunciation of words is a minor rather than a major source of error in spelling" (p. 45) is undoubtedly true for a very large percentage of words, but that mispronunciation is very important in the case of certain words has been cleverly and undeniably shown in an investigation by Marjorie Edith Kay (*The Effect of Errors in Pronunciation upon Spelling*. Unpublished Master's thesis, University of Iowa, 1927).

Judged by the available and fairly adequate statistical information as to the variety of letters associated with a given sound and the variety of sounds associated with a given letter, the suggestions for grouping words should be regarded with skepticism until definitely proved to be of value. Archer, in his *Transfer of Training in Spelling* (University of Iowa Studies in Education, Volume V, Number 5), and others have shown that transfer from groupings and generalizations in spelling may operate undesirably as well as desirably; therefore, it seems probable that any principle of grouping will be helpful only when it may be expected to operate favorably in almost all cases and harmfully in very few. The only principles in spelling which have so far been reliably shown to include approximately all the cases, and therefore to have few exceptions, are the generalizations for writing contractions, for using apostrophes, and for adding suffixes to base words.

These challenges to the author's interpretation are not meant to detract in any way from the contributions of the monograph. The author is very careful at all times to point out what conclusions are justified by the evidence and what are mere hypotheses that seem to the experimenter to be suggested by the data. The author rightly suggests the crucial need of additional research on the problem. The quality of this monograph leads one to suspect that the author himself will have an important part in the conduct of this research.

ERNEST HORN

UNIVERSITY OF IOWA

A study of methods of teaching in teachers' colleges.—One of the significant trends in higher education today is the effort to improve the quality of teaching. Many articles and reports have appeared recently describing teaching procedures in specific institutions or presenting the results of efforts to improve instruction. Very few studies have been reported, on the other hand, which attempt to describe and analyze in a comprehensive way the methods employed by instructors in institutions of given types. Chandler has recently made one such study[1] of the methods of teaching used in six teachers' colleges in as many states.

The purpose and scope of Chandler's study are suggested definitely by the following questions: What methods of teaching do instructors in teachers' colleges employ? Which methods are recommended most highly by outstanding authorities in the field? An answer to the first question was secured through visits made to 114 classes in the social sciences, the biological sciences, special methods, principles of education, and psychology. In this connection a list of specific questions relating to the methods used was followed. In order to determine the validity of the practices recorded, fifteen experts in the field of methodology gave judgments relative to the extent to which the practices listed should be used. Chandler's analysis and conclusions are, therefore, based on reasonably objective data.

The detailed sections of the report relate to four major topics: types of assignments (assignments containing references by pages, assignments containing topical outlines and references, assignments containing lists of questions with references, and assignments containing problems); methods of assigning; types of recitations (inductive and deductive, lecture, appreciation lesson, drill lesson, committee, debate, field work, laboratory, socialized recitation); and attitudes of teachers and students. In addition a series of supplementary problems (provision for individual differences, elaboration of points, repetition of students' answers, lesson summary, etc.) is considered.

The analysis of the data and the summary give interesting and significant insights into current practices. Unfortunately, the study fails to give an illuminating description of the patterns of teaching found in teachers' colleges and the direction which reform should take. Nevertheless, instructors in teachers' colleges may read this report to distinct advantage for the purpose of checking many of their practices against the judgments of others.

WILLIAM S. GRAY

Natural science in German schools.—The author of a recent book[2] spent thirteen months in Germany visiting and studying the schools. The German

[1] Paul G. Chandler, *Some Methods of Teaching in Six Representative State Teachers Colleges of the United States.* Teachers College Contributions to Education, No. 425 New York: Teachers College, Columbia University, 1930. Pp. vi+150. $1.50.

[2] Lois Meier, *Natural Science Education in the German Elementary Schools.* Teachers College Contributions to Education, No. 445. New York: Teachers College, Columbia University, 1930. Pp. vi+158. $1.75.

school system now consists of (1) a four-year *Grundschule* attended by all children, (2) a *Volksschule* of four years attended by 70 per cent of the children—those who are preparing for the trades and commercial life and who will go into trade schools of various types—(3) secondary schools (nine years) attended by the remaining 30 per cent of the children—those who are going to the universities to prepare for professions—and (4) the *Aufbauschule* (six years), which takes unusually promising pupils at the end of the third year of the *Volksschule* and trains them in a course similar to that of the *Oberrealschule* for the university. The secondary schools are of four types: (1) the *Oberrealschule* offering a course rich in natural science and mathematics, (2) the *Gymnasium* offering a classical course, (3) the *Realgymnasium* offering a modern-language course and Latin, (4) the *Oberschule* offering a modern German-culture course.

The science instruction in the *Grundschule* is given largely in walks which are taken to become acquainted with the local community. Each pupil writes up these trips in a permanent notebook. The science instruction occupies from 5 to 10 per cent of the total instructional hours of the first four years. These object lessons deal with plant, animal, and physical materials, especially with those of industrial value.

The same type of instruction continues through the *Volksschule* and occupies from 6 to 12 per cent of the total time. The aims of the science instruction in the *Grundschule* and *Volksschule* are stated in the Prussian program of studies as follows: "In natural-science instruction the children are to be led to observe and to judge objects, life, and processes of nature so that they may acquire pleasure in nature and achieve a modest degree of understanding and knowledge of nature, and be enabled to make use of this information in life" (p. 50).

In the secondary schools science occurs in every year. Thus, physics in the Prussian *Oberrealschule* runs through six years. The science totals from 8 per cent of all instruction in the *Gymnasium* to 17 per cent in the *Oberrealschule*. Roughly, 30 per cent is biology, 45 per cent physics, and 25 per cent chemistry.

Teachers are trained for the elementary schools in teachers' colleges (in Prussia) or departments of education at the universities. It is presumed that they have acquired their science subject matter in the secondary schools, from which they must receive a certificate to enter the teacher-training institution. The teacher-training courses are pedagogical rather than subject-matter courses and deal with the theoretical background as well as the practical phases of teaching science. There is, furthermore, a well-organized plan for training teachers in service.

E. R. DOWNING

The psychological study of educational problems.—During the past few decades there has been a rapid growth in the psychological study of school problems. In many of our cities psychological clinics, child-guidance centers, research bureaus, and other forms of activities for the special study of certain phases of these problems have been established. A recent book[1] summarizes the present

[1] Gertrude H. Hildreth, *Psychological Service for School Problems*. Yonkers-on-Hudson, New York: World Book Co., 1930. Pp. xiv+318. $2.16.

status of this movement in an excellent way. The author states that "one of the major purposes of the book is to reduce the large amount of trial and error experienced by psychologists and child study specialists in functioning in the school situation" (p. iv).

The author describes the nature of the content of the book in the following statement: "The material is organized in such a way as to describe the implications of psychological service for educational institutions, both from the point of view of actual practice and expert opinion; progressive movements in education which have created the need for psychological service; and, in more detail, the actual work of administering psychological service in the schools" (p. iv).

The book contains eleven chapters. The first two discuss the growth and administrative organization of psychological service. The third and fourth chapters contain a brief discussion of the principles of psychological measurement and the administration of standard tests. Chapters v, vi, and vii deal with the techniques for studying the exceptional child and the need of diagnostic and remedial work. Problems related to pupil classification, guidance, and the equipment needed are briefly presented in the next three chapters. In the last chapter the author summarizes some problems in psychological service that need further study. For each chapter there are questions and topics for students using the book as a textbook. An excellent bibliography of thirty-two pages and a summary of thirty pages listing the available tests of all kinds constitute the remainder of the book.

In most cases the presentation of the topics seems to be adequate and well balanced; in others the discussion is very brief and not sufficiently detailed to be of much assistance to the uninformed individual. This situation probably is a result of the fact that the author merely wished to introduce illustrative material to present a point of view. The discussion also deals chiefly with the organization of psychological service in large cities. Few specific recommendations are made for small school systems in which the services of experts are not available.

This book will be read with much interest by those who are contemplating the establishment of a special agency for studying educational problems. It contains many valuable suggestions as to the principles that should underlie the policies determining the activities of such a service.

LEO J. BRUECKNER

UNIVERSITY OF MINNESOTA

A guide for students of education.—The vigorous attack on the problems of education which has been made in this country during the past quarter of a century has produced a vast body of literature on the subject. To make anything like a complete bibliography on almost any problem requires a great deal of effort and skill in the use of the tools of documentary research. Each year it becomes more and more necessary that students of education have access to bibliographical aids.

Everyone interested in locating the published sources in the field of education will find a recent bulletin[1] published by the University of Illinois exceedingly helpful. The second chapter of the bulletin lists and discusses in some detail standard reference works, book lists, reviews and abstracts, special collections in libraries, and general guides for locating information. The third chapter is devoted to a discussion of educational periodicals. Attention is given to professional magazines for teachers of special subjects, to periodicals that have ceased publication, and to educational periodicals published by universities and colleges. Of special value is a selected list of educational periodicals. Each periodical in the list is described in sufficient detail to enable the reader to get an idea of the purpose of the magazine and of the kind of subject matter it publishes. Chapter iv describes other publications of various types, such as those of the United States Office of Education, other government publications relating to education, publications of state departments of education, university and college publications, city-school publications, publications of national and regional educational associations, reports of educational surveys, and publications of other private agencies. Chapter v contains a bibliography of bibliographies. In this chapter there are listed alphabetically by author 601 bibliographies on various educational topics. The period covered by each bibliography and the types of materials included are described. In the back of the bulletin is an index by topics, which enables the reader to find readily the bibliographies on a particular subject.

NEWTON EDWARDS

The educative use of the dramatic impulse.—Two experienced teachers of dramatics announce their major purpose in the Preface of their new book[2] as follows: "to discuss the principles and the pedagogy underlying the correct use of the dramatic impulse" (p. xviii). They develop this theme in thirty-six compact and pithy chapters arranged in three groups: Part I, "The Dramatic Impulse" (eight chapters); Part II, "The Educative Use of the Dramatic Impulse" (fourteen chapters); Part III, "Notes on and Illustrations of Original Playmaking" (fourteen chapters). The elaborate examples included in Part III are taken from the work done in the Francis W. Parker School and in the Elementary School of the University of Chicago. Part IV includes extensive bibliographies of plays and of valuable books and periodicals dealing with the art of the theater. The volume is enlivened by fifty-five illustrations reproduced from photographs of stage-settings and scenes of dramatizations from the Francis W.

[1] Walter S. Monroe, Thomas T. Hamilton, Jr., and V. T. Smith, *Locating Educational Information in Published Sources.* Bureau of Educational Research Bulletin No. 50. University of Illinois Bulletin, Vol. XXVII, No. 45. Urbana, Illinois: University of Illinois, 1930. Pp. 142.

[2] John Merrill and Martha Fleming, *Play-making and Plays:* The Dramatic Impulse and Its Educative Use in the Elementary and Secondary School. New York: Macmillan Co., 1930. Pp. xx+580. $2.60.

Parker School. The authors somewhat needlessly apologize for the absence of color and for certain misleading effects caused by the lack of appropriate lighting in the illustrations.

The point of view taken by these teachers is sound; their program of education through the study of the drama is sensible. They vigorously decry the waste of time and energy spent in the preparation of musical comedies, trivial farces and meretricious plays such as are too often produced in extra-curriculum clubs and such as are even more frequently produced as professionally-coached entertainments at commencement. In contrast to such cheap productions they offer dignified courses in the study of high-class dramas as literature, accompanied by a thorough study of the various arts of the theater. They regard preparation for the staging of plays as the laboratory aspect of class work. It is distinctly heartening to read about the work of teachers who realize that the finished products of their pupils in dramatics, or for that matter in any other school subject, are relatively unimportant as compared with the merits of the learning processes through which pupils are guided in the preparation of finished products.

Chapter xxix presents the making of a play called "The Magic Gifts" by an elementary-school group. All the processes, from the choice of the story through the writing of the play, the preparation for staging, the staging, and the text of the play itself, are laid concretely before the reader. An inexperienced teacher, after studying the procedures described in this and other chapters, would have definite ideas of carrying through similar enterprises. Moreover, the carefully annotated lists of meritorious plays suitable for school use given on pages 411–52 make the volume indispensable for all teachers of the drama.

R. L. LYMAN

An investigation of rural child life.—During a period when vigorous effort is being made to understand child life more thoroughly and to promote child welfare in every way possible, the results of the recent investigation[1] of rural child life in selected areas of Iowa are particularly significant. This study was conducted largely under the direction of Bird T. Baldwin, late director of the Iowa Child Welfare Research Station, with financial assistance from the Laura Spelman Rockefeller Memorial and co-operation from various departments in the University of Iowa. The specific aim of the study was "to determine the factors that influence the physical, mental, educational, and social development of farm children" (p. 2) in two supposedly typical areas of Iowa. Various methods were used in securing essential data, such as a review of the historical background, group and individual testing, clinical examinations, and personal inquiry.

Because of the extensive scope of the survey and the large number of factors

[1] Bird T. Baldwin, Eva Abigail Fillmore, and Lora Hadley, *Farm Children:* An Investigation of Rural Child Life in Selected Areas of Iowa. New York: D. Appleton & Co., 1930. Pp. xxii+338. $4.00.

studied it is impossible to outline here all the problems studied. Following a brief introduction, the report is divided into five parts. Part I presents the historical background of the communities studied under the general chapter headings: "The Territory That Became Iowa" and "Growth of Community Influences." Part II is concerned with the environment of farm children, which is discussed under the following headings: "Characteristics of Community and Home," "Some Social and Economic Factors of Farm Life," "The System of Rural Schools," "Factors Affecting Education in the One-Room School," "Factors Affecting Education in the Consolidated School." Part III relates to the life of farm children, which is discussed under the following headings: "Characteristics of Farm Children," "Activities of Farm Children," "Advantages and Disadvantages of Farm Life." Part IV discusses the physical and mental development of farm children, including their educational achievements, their musical capacity, and their important characteristics of speech. The conclusions which are presented in Part V emphasize the fact that, although communities may be very similar in many respects, they differ in other respects which give them well-defined individualities. These differences affect directly the child life of the communities, the children differing according to the influences that surround them.

The report as a whole is a very illuminating discussion of the conditions that influence child welfare in farm communities. It should be read by those interested in general social conditions, educational problems, and health conditions of rural children. It emphasizes numerous significant relationships which may be studied to advantage by anyone interested in child welfare in communities of other types.

WILLIAM S. GRAY

A textbook in history for the upper elementary grades.—A recent textbook[1] in the history of the United States is designed for use in the upper elementary grades and in the junior high school. The book is divided into ten parts with a total of forty-two chapters. In the Appendix appear the Declaration of Independence, the Constitution of the United States, dates of important events, and valuable statistical tables.

The book unfolds in a unified way the great movements in the history of our country, giving their causes and outcomes, instead of presenting a great number of unrelated facts. It combines the best features of the chronological and the topical methods—a procedure that is pedagogically sound. Large units of subject matter and not insignificant details are stressed. This fact is seen by a glance at the Table of Contents. The ten parts into which the book is divided are entitled: "Finding a New World," "Settling North America," "The Winning of

[1] James Albert Woodburn, Thomas Francis Moran, and Howard Copeland Hill, *Our United States: A History of the Nation.* New York: Longmans, Green & Co., 1930. Pp. 780+xxxiv.

Independence," "Establishing a New Government," "The Development of the Nation," "The Struggle over Slavery," "Rebuilding the Nation," "The Coming of World Power," "The New Democracy," "The Nation of To-day."

A striking feature of the book is the preview appearing at the beginning of each of the ten parts. Each preview gives the heart of the material of the part that follows. Following each chapter are problems, projects, and exercises of various kinds for the teacher and the pupils. Another striking feature is to be found in the material under the caption "Looking Backward" given at the close of each of the ten parts. This material summarizes the work of the parts by providing excellent reviews. It contains a number of exercises dealing with sequence of events, historical terms, and important persons; it also includes completion and comprehension tests.

An outstanding feature of the book is the list of books for the class library which may be used in the history classroom or in the school library. It contains the following fourteen titles: *The Book of the United States*, by Elsie Singmaster; *Women in American History*, by Grace Humphrey; *America First*, by Lawton Bryan Evans; *Makers of Our History*, by John T. Faris; *Source Book of American History*, edited by Albert Bushnell Hart; *Heroes of Progress*, by Eva March Tappan; *Readings in Community Life*, by Howard C. Hill; *Our Presidents*, by James Morgan; *Our Times*, by Mark Sullivan; *America, the Great Adventure*, by George P. Krapp; *This Country of Ours*, by Henrietta Elizabeth Marshall; *The Book of Knowledge; Compton's Pictured Encyclopedia;* and *The World Book Encyclopedia*. The books in the class library are referred to time and again throughout the volume.

The textbook is well illustrated. It is written in a simple and interesting style easily understood by pupils of the upper grammar and junior high school grades. All in all, the book is outstanding in its field.

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Mathematics for the upper grades.—The mathematics of the seventh, eighth, and ninth grades has been reorganized in order to meet the needs of the pupils in the junior high school. Consequently, many series of textbooks in mathematics have appeared which aim to give the pupil at this stage of his school life a complete course known as junior high school mathematics. A recent series of such a nature,[1] consisting of three books, aims to acquaint the pupil with the larger uses of this subject in everyday life.

Book One, which is to be used in the seventh grade or first year of the junior high school, introduces the pupil to the fundamental processes of algebra and the basic concepts of intuitive geometry. Both of these sets of new ideas are di-

[1] George Drayton Strayer and Clifford Brewster Upton, *Junior Mathematics:* Book One, pp. vi+266+xx; Book Two, pp. vi+282+xxii; Modern Algebra (Ninth Year), pp. vi+314+xxxii. Chicago: American Book Co., 1930.

rectly associated with arithmetical operations and manipulations. Book Two presents the pupil with manifold opportunities for the utilization and application of both the algebraic and geometric notions which he acquired through his study of the first book. The applications to arithmetic, intuitive geometry, and the equation are presented in a way that is both real and interesting to pupils of junior high school age. The third book, which is entitled "Modern Algebra," is a comprehensive treatment of the fundamental concepts and processes of elementary algebra. Throughout the book an attempt is made to approach new concepts gradually; thus the pupil is given an opportunity to gain an understanding of the fundamental principles and processes rather than to manipulate symbols. The function concept is given some attention by means of a study of the relations between quantities as expressed by the formula, the equation, and the graph.

The organization both of the whole series and of each book is well planned and successfully carried out. Each new process or concept is presented with such simplicity and clearness that the initial step in its learning is bound to be taken by the pupil with confidence and anticipation. Each process is then rationalized by means of many applications which are interesting and within the experience of the child. The exercises are well graded, and the pupil is not plunged immediately into difficult situations. In this way the pupil's complete mastery of each topic is assured, and provision is made for individual differences. The language of the series is simple and within the understanding of the child. Many excellent illustrations are given, and the drawings are well made. On the whole, the series is attractive and should find favor with teachers of junior high school mathematics.

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